Greater New Orleans Area Hurricane & Storm Damage Risk Reduction System

Col. Robert Sinkler, Commander
Hurricane Protection Office

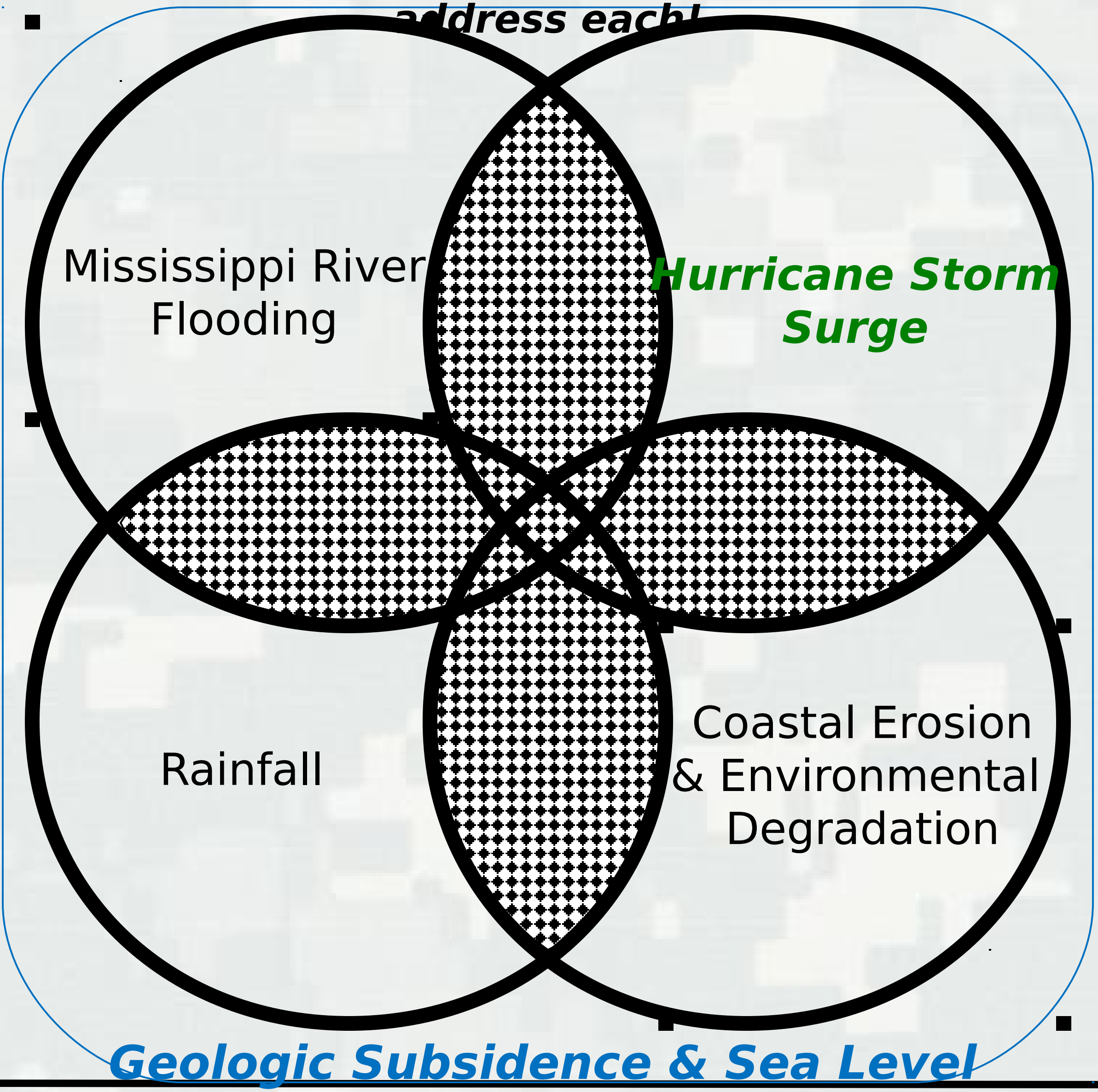
US Army Corps of Engineers®
BUILDING STRONG®

Agenda

- New Orleans Situation
- Hurricane Protection Office Mission
- Guidance
- Project Enablers
- Innovative Project Delivery Methods
- Innovative Project Delivery Teams
- East Bank HSDRRS Update
- Questions

The Four Major New Orleans Flood Risks

Separate, but overlapping or related interagency systems or programs to address each!



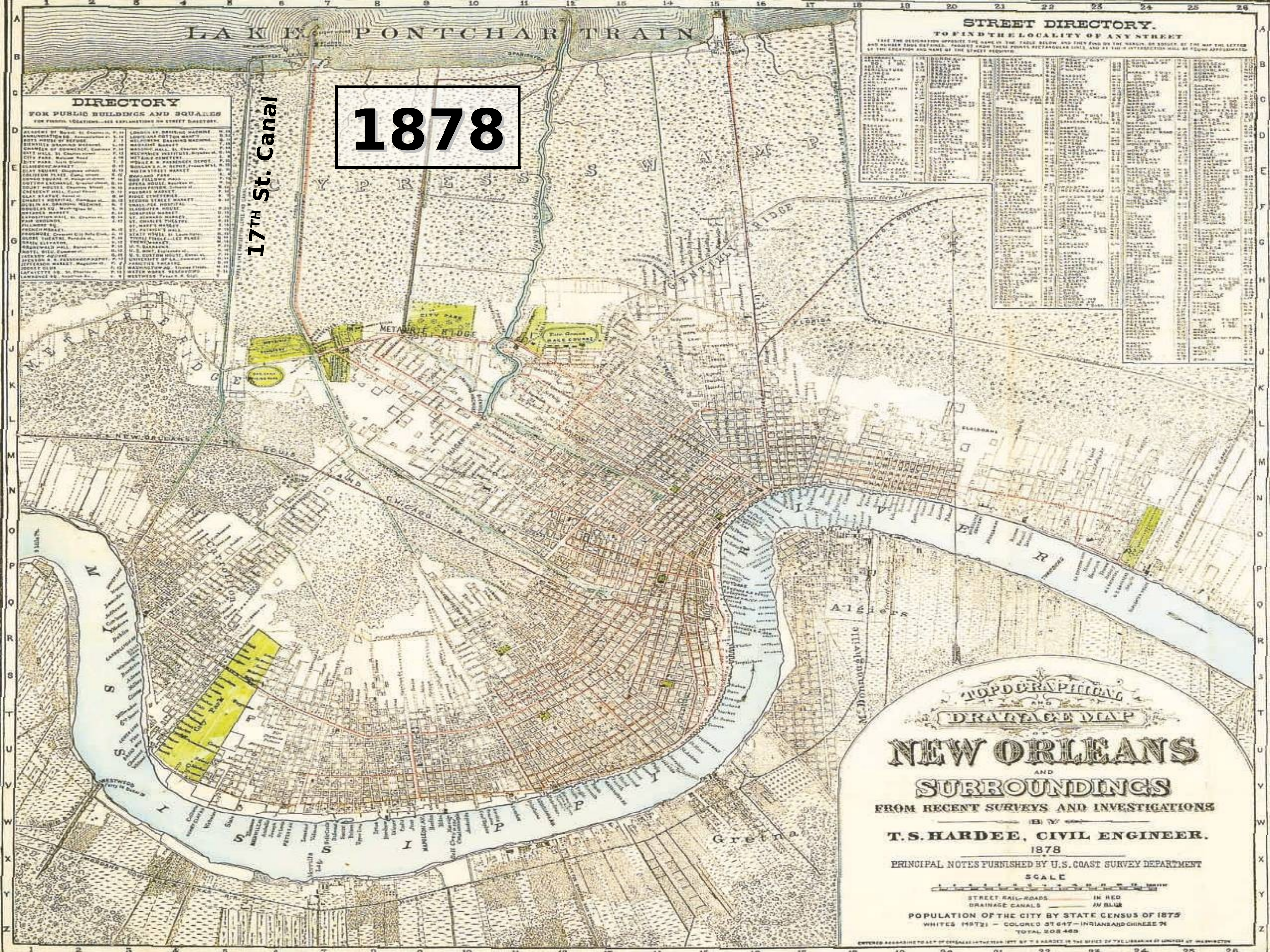
Mississippi River Flooding

Hurricane Storm Surge

Rainfall

Coastal Erosion & Environmental Degradation

Geologic Subsidence & Sea Level Rise


1878

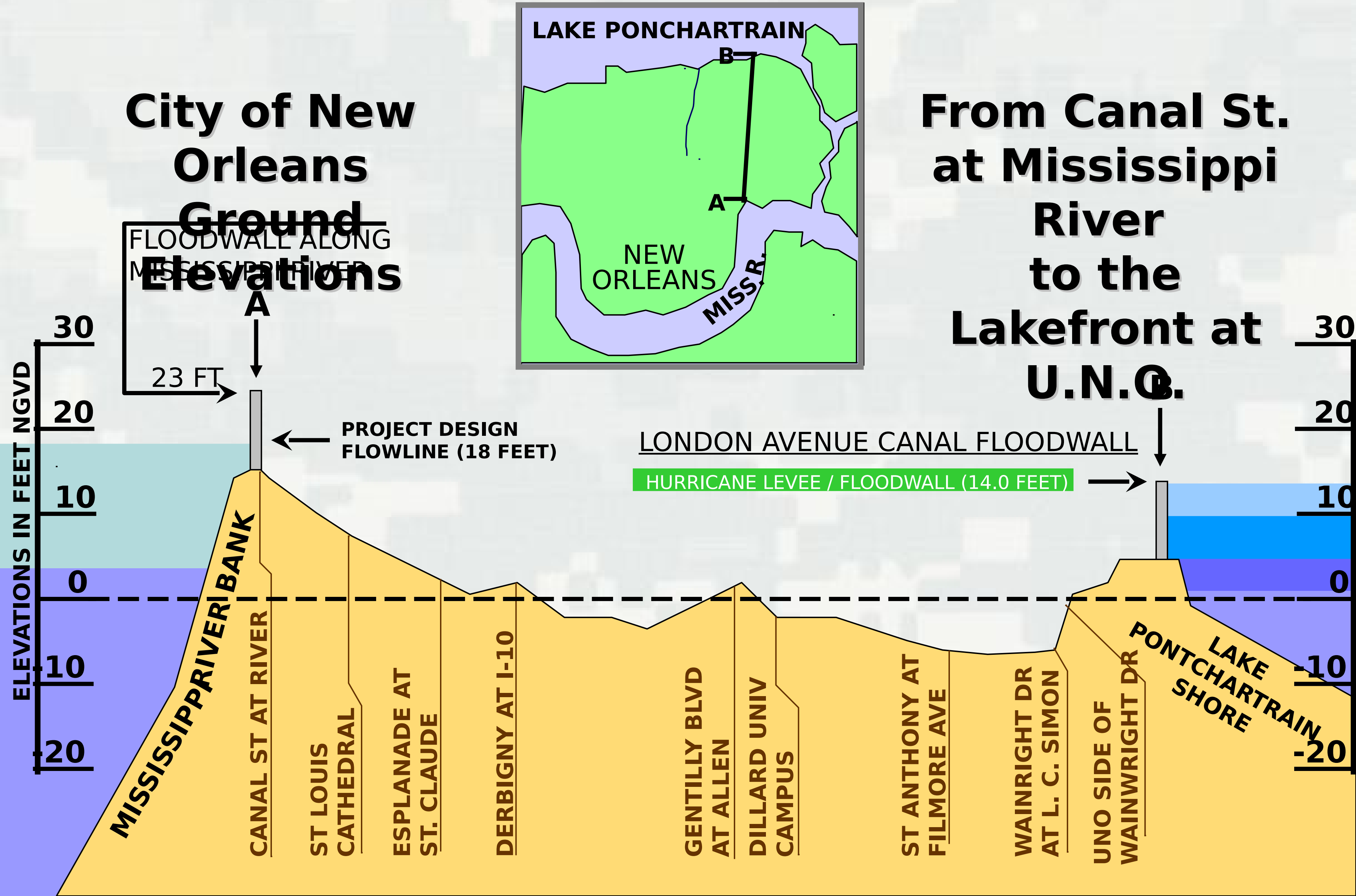
17TH St. Canal

LAKE PONTCHARTRAIN
DIRECTORY FOR PUBLIC BUILDINGS AND SQUARES
STREET DIRECTORY.
TO FIND THE LOCALITY OF ANY STREET
CYPRESS SWAMP
METAIRIE RIDGE
GENTILLY RIDGE
CITY PARK
RACE COURSE
NEW ORLEANS
ST. LOUIS
CHICAGO
MISSISSIPPI RIVER
Algiers
Gretna
McDonoughville
TOPOGRAPHICAL AND DRAINAGE MAP OF NEW ORLEANS AND SURROUNDINGS
FROM RECENT SURVEYS AND INVESTIGATIONS
BY
T. S. HARDEE, CIVIL ENGINEER.
1878
PRINCIPAL NOTES FURNISHED BY U.S. COAST SURVEY DEPARTMENT
SCALE
STREET RAIL-ROADS IN RED
DRAINAGE CANALS IN BLUE
POPULATION OF THE CITY BY STATE CENSUS OF 1875
WHITES 149721 — COLORED 57647 — INDIANS AND CHINESE 71
TOTAL 208 463

New Orleans Topography

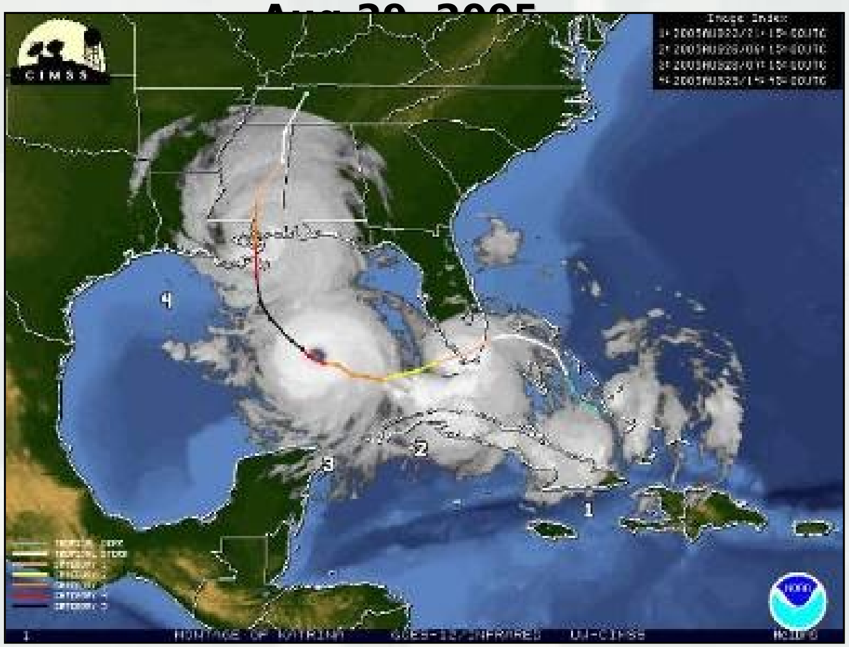
City of New Orleans Ground Elevations

From Canal St. at Mississippi River to the Lakefront at U.N.O.


LAKE PONCHARTRAIN
B
A
NEW ORLEANS
MISS. R.
FLOODWALL ALONG MISSISSIPPI RIVER
A
23 FT
PROJECT DESIGN FLOWLINE (18 FEET)
LONDON AVENUE CANAL FLOODWALL
B
HURRICANE LEVEE / FLOODWALL (14.0 FEET)
ELEVATIONS IN FEET NGVD
30
20
10
0
-10
-20
30
20
10
0
-10
-20
MISSISSIPPI RIVER BANK
MISSISSIPPI RIVER
CANAL ST AT RIVER
ST LOUIS CATHEDRAL
ESPLANADE AT ST. CLAUDE
DERBIGNY AT I-10
GENTILLY BLVD AT ALLEN
DILLARD UNIV CAMPUS
ST ANTHONY AT FILMORE AVE
WAINRIGHT DR AT L. C. SIMON
UNO SIDE OF WAINWRIGHT DR
LAKE PONTCHARTRAIN SHORE

Hurricane Katrina

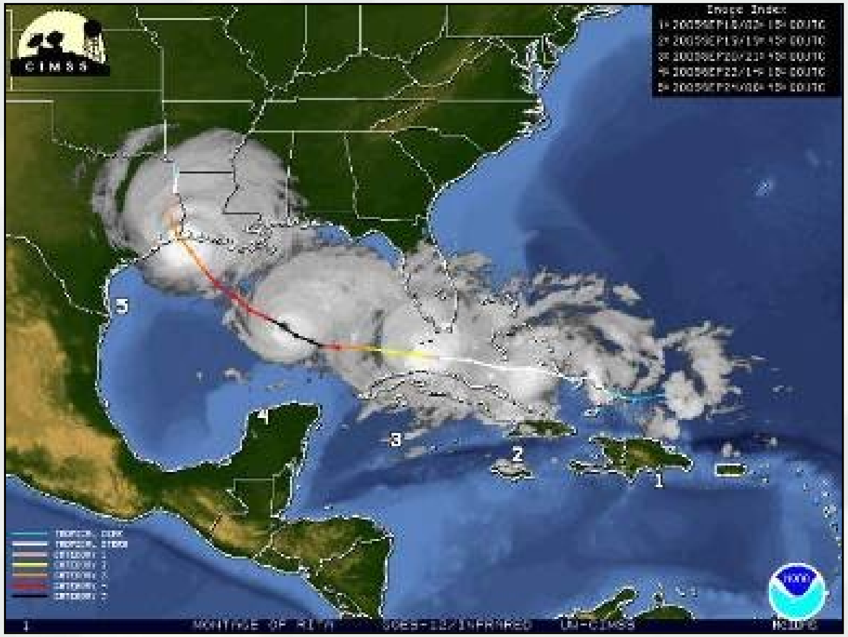
Aug 29, 2005


CIMSS
4
3
2
1
MONTAGE OF KATRINA GOES-12/INFRARED UW-CIMSS

- **One of America’s largest natural disasters**
- **Cat 5 less than 12 hrs before landfall**
- **127 MPH wind at Louisiana landfall**
- **Maximum surge of 28 to 30 feet along Mississippi coast**
- **80 percent of the city of New Orleans flooded**

Hurricane Rita

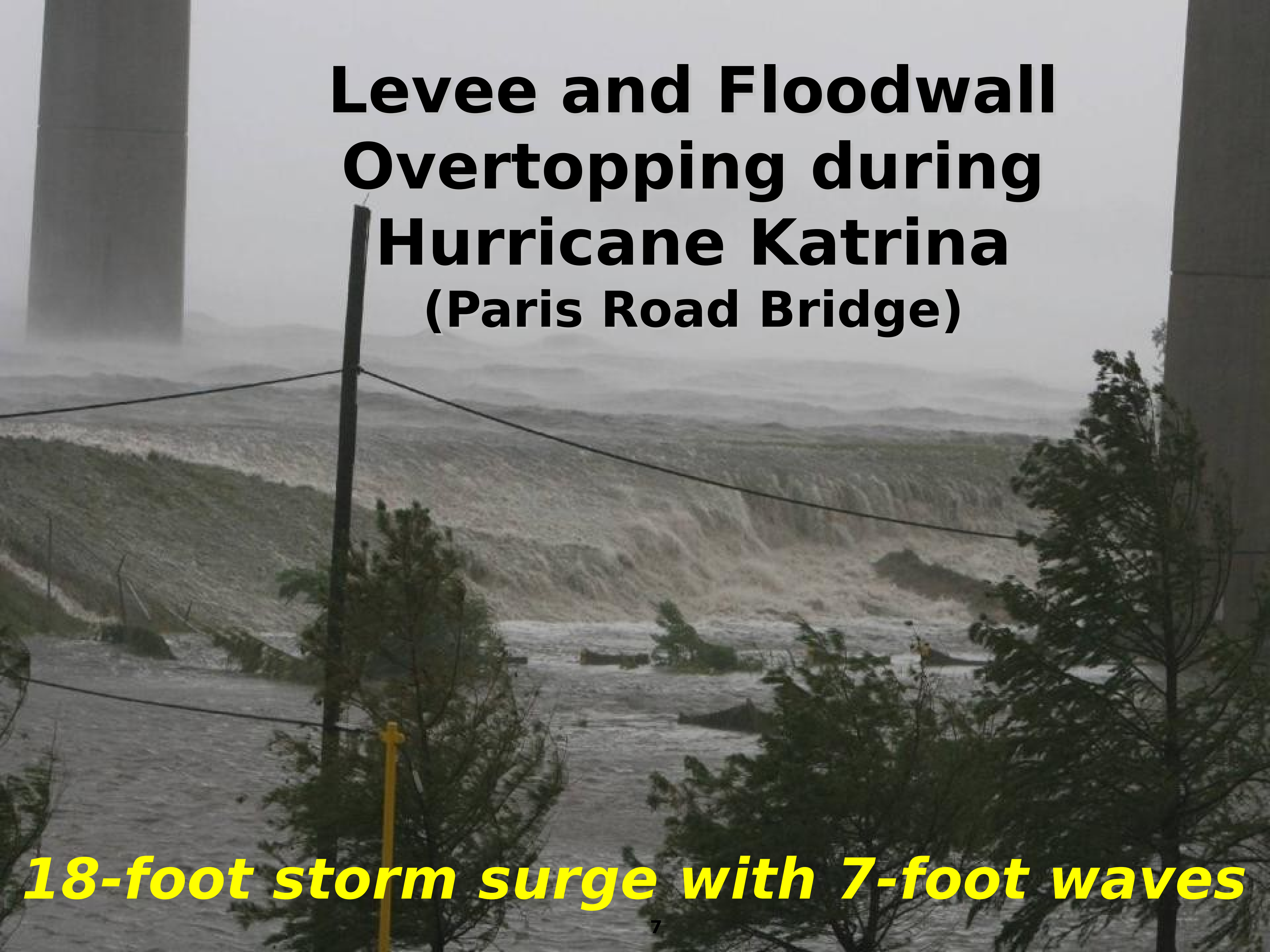
Sep 24, 2005


CIMSS
5
4
3
2
1
MONTAGE OF RITA GOES-12/INFRARED UW-CIMSS

- **Cat 4 less than 12 hrs before landfall**
- **175 MPH max sustained winds in Gulf of Mexico**
- **120 MPH max sustained winds at landfall**
- **Cat 3 strength at landfall**

Levee and Floodwall Overtopping during Hurricane Katrina

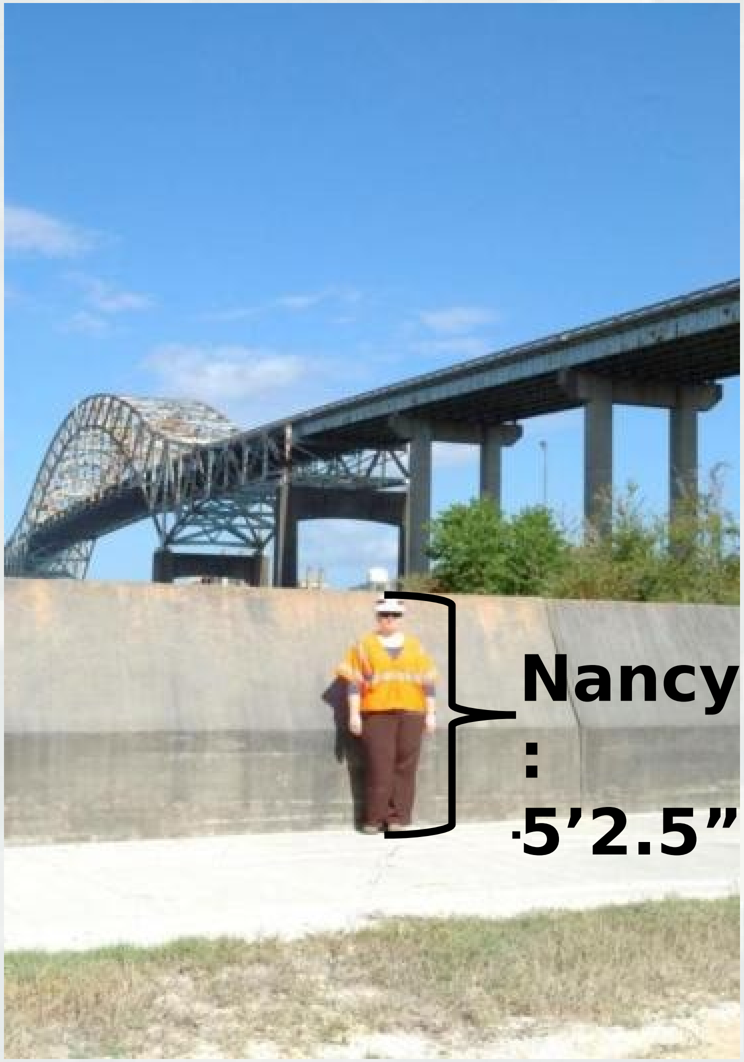
(Paris Road Bridge)



18-foot storm surge with 7-foot waves

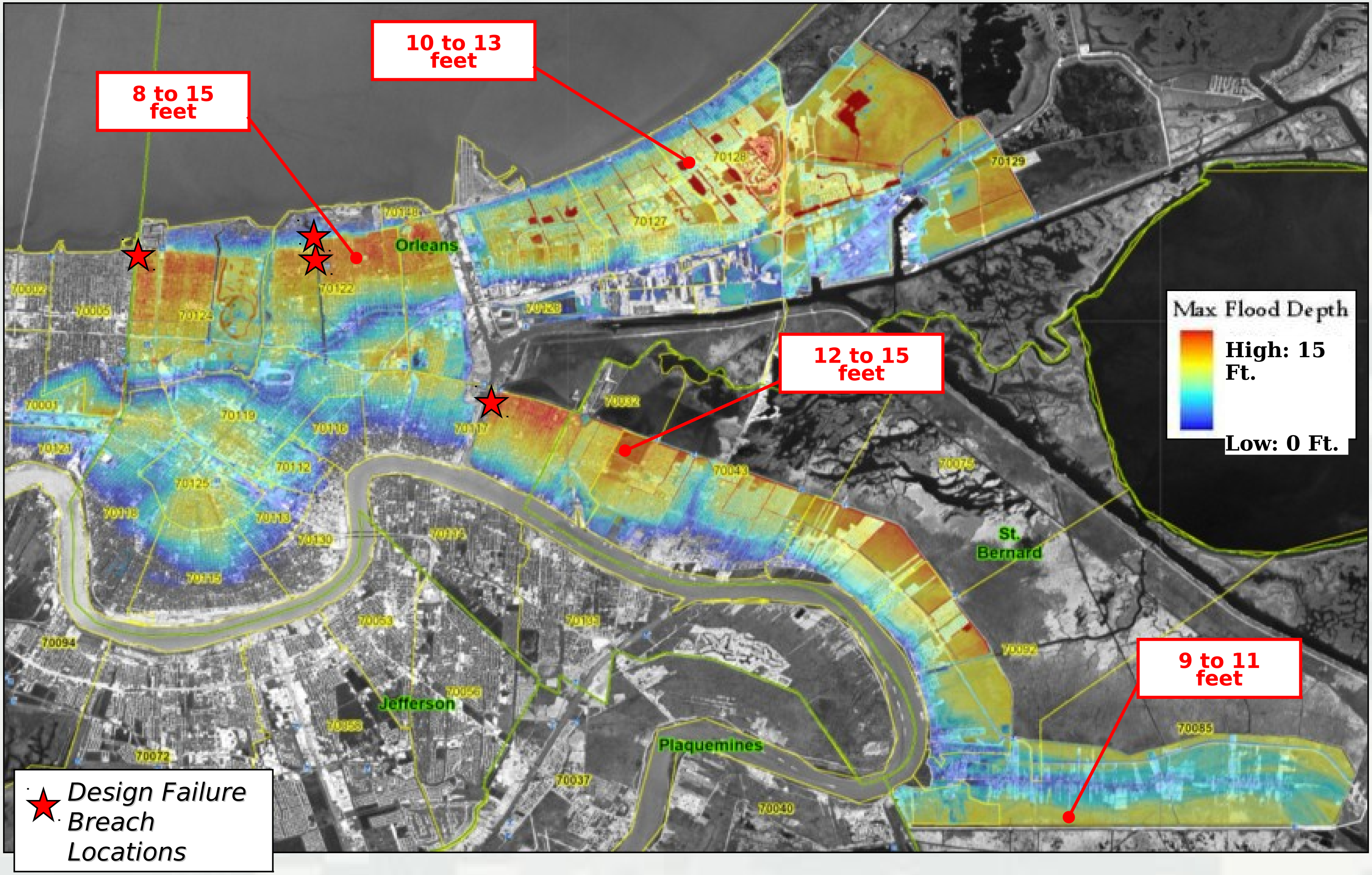
Pre-Katrina Floodwall

(Paris Road Bridge)



Nancy : 5’2.5”

New Orleans
2005 Maximum Flooding Depth


8 to 15 feet

10 to 13 feet

12 to 15 feet

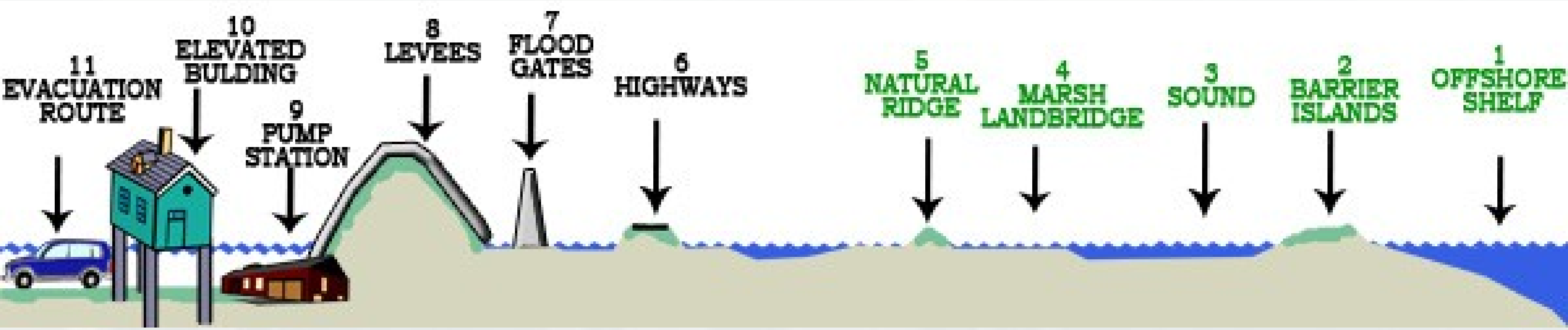
9 to 11 feet

Max Flood Depth
High: 15 Ft.
Low: 0 Ft.

★ Design Failure Breach Locations

Orleans
St. Bernard
Jefferson
Plaquemines
70126
70129
70127
70128
70122
70124
70002
70005
70001
70119
70116
70117
70121
70112
70125
70118
70113
70130
70115
70114
70032
70043
70075
70092
70085
70053
70131
70094
70056
70058
70072
70037
70040

Multiple Lines of Defense

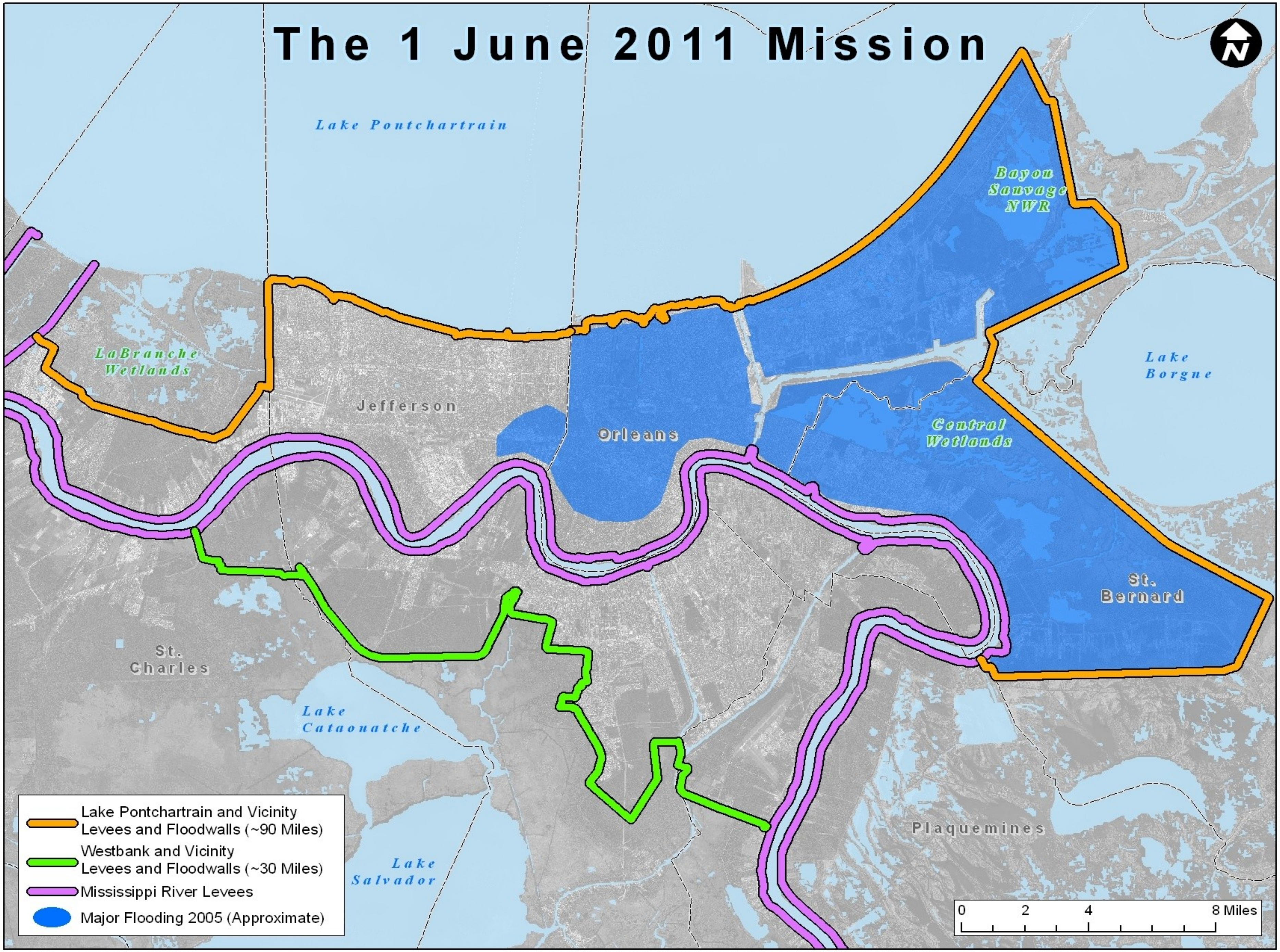

11 EVACUATION ROUTE
10 ELEVATED BUILDING
9 PUMP STATION
8 LEVEES
7 FLOOD GATES
6 HIGHWAYS
5 NATURAL RIDGE
4 MARSH LANDBRIDGE
3 SOUND
2 BARRIER ISLANDS
1 OFFSHORE SHELF

(Graphic from www.mlods.org)

Elements include:

- **Coastal restoration/protection**
- **Structural measures**
- **Non-structural features**

The 1 June 2011 Mission


N
Lake Pontchartrain
Bayou Sauvage NWR
LaBranche Wetlands
Jefferson
Orleans
Lake Borgne
Central Wetlands
St. Bernard
St. Charles
Lake Cataouatche
Lake Salvador
Plaquemines
Lake Pontchartrain and Vicinity Levees and Floodwalls (~90 Miles)
Westbank and Vicinity Levees and Floodwalls (~30 Miles)
Mississippi River Levees
Major Flooding 2005 (Approximate)
0
2
4
8 Miles

The 1 June 2011 Mission

Lake Pontchartrain & Vicinity
(~ $ 5.3 Bil)

Perimeter Levees & Floodwalls

E. St. Charles & E. Jefferson (~30 miles)
Orleans Parish (East & Metro) (~30 miles)
St. Bernard Parish (~30 miles)

Major Projects

IHNC Surge Barrier & Seabrook Gate**
Interim Closure Structures & Perm. Pumps**

Other

Storm Proofing (incl. West Bank)**
Existing Pump Station Repair (incl. West Bank)

West Bank & Vicinity
(~ $ 2.3 Bil)

Perimeter Levees & Floodw

W. St. Charles, W. Jefferson &
Plaquemines (~30 miles)

Major Project

West Closure Complex

Mississippi River Levee

Engineered Adv. Meas. (~15 m

Interior Canal Walls (June Commitment)

17th Street Canal*
London Avenue Canal*
Orleans Avenue Canal
IHNC*

Interior Canal Walls

*Harvey Canal***
*Algiers Canal***

** 2005 Design Failure* ** *Some substantial work not required for 1 June*

Regional Perimeter HSDRRS Delivery*

One System, Two Regional Execution Teams (Black Circles)

Southeast Louisiana Flood Protection Authority - East

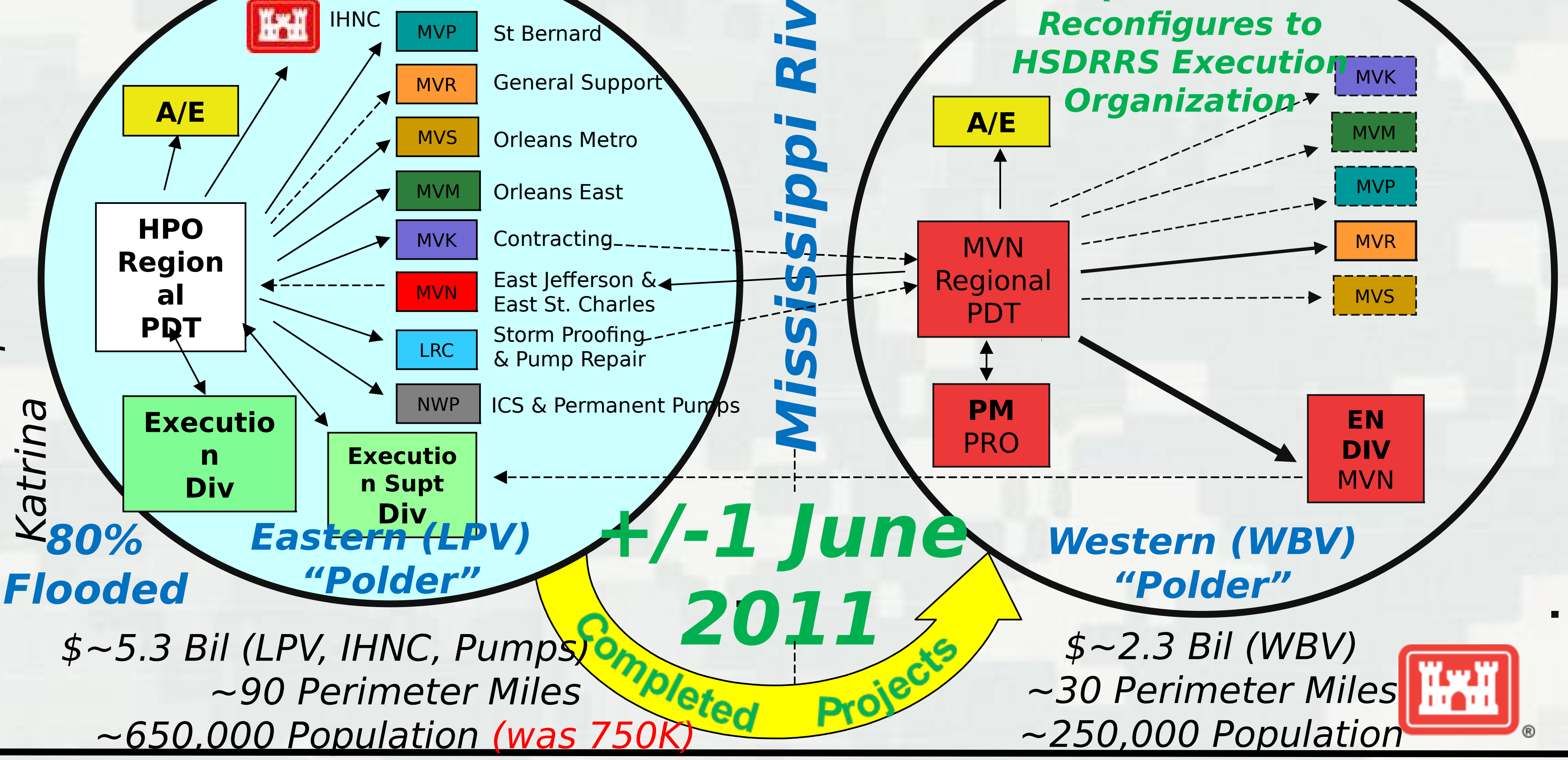
COL Robert Sinkler
Commander
Hurricane Protection Office

Tim Doody
President,
SLFPA-East

Southeast Louisiana Flood Protection Authority - West

COL Edward Fleming
Commander
New Orleans District

Susan Maclay
President,
SLFPA-West



60% complete Pre-Katrina
IHNC
A/E
HPO Regional PDT
MVP St Bernard
MVR General Support
MVS Orleans Metro
MVM Orleans East
MVK Contracting
MVN East Jefferson & East St. Charles
LRC Storm Proofing & Pump Repair
NWP ICS & Permanent Pumps
Execution Div
Execution Supt Div
Mississippi River
4 Qtr FY 2011 Reconfigures to HSDRRS Execution Organization
A/E
MVN Regional PDT
PM PRO
MVK
MVM
MVP
MVR
MVS
EN DIV MVN
40% complete Pre-Katrina
+/-1 June 2011
Completed Projects

80% Flooded

Eastern (LPV) "Polder"

$~5.3 Bil (LPV, IHNC, Pumps)
~90 Perimeter Miles
~650,000 Population (was 750K)

Western (WBV) "Polder"

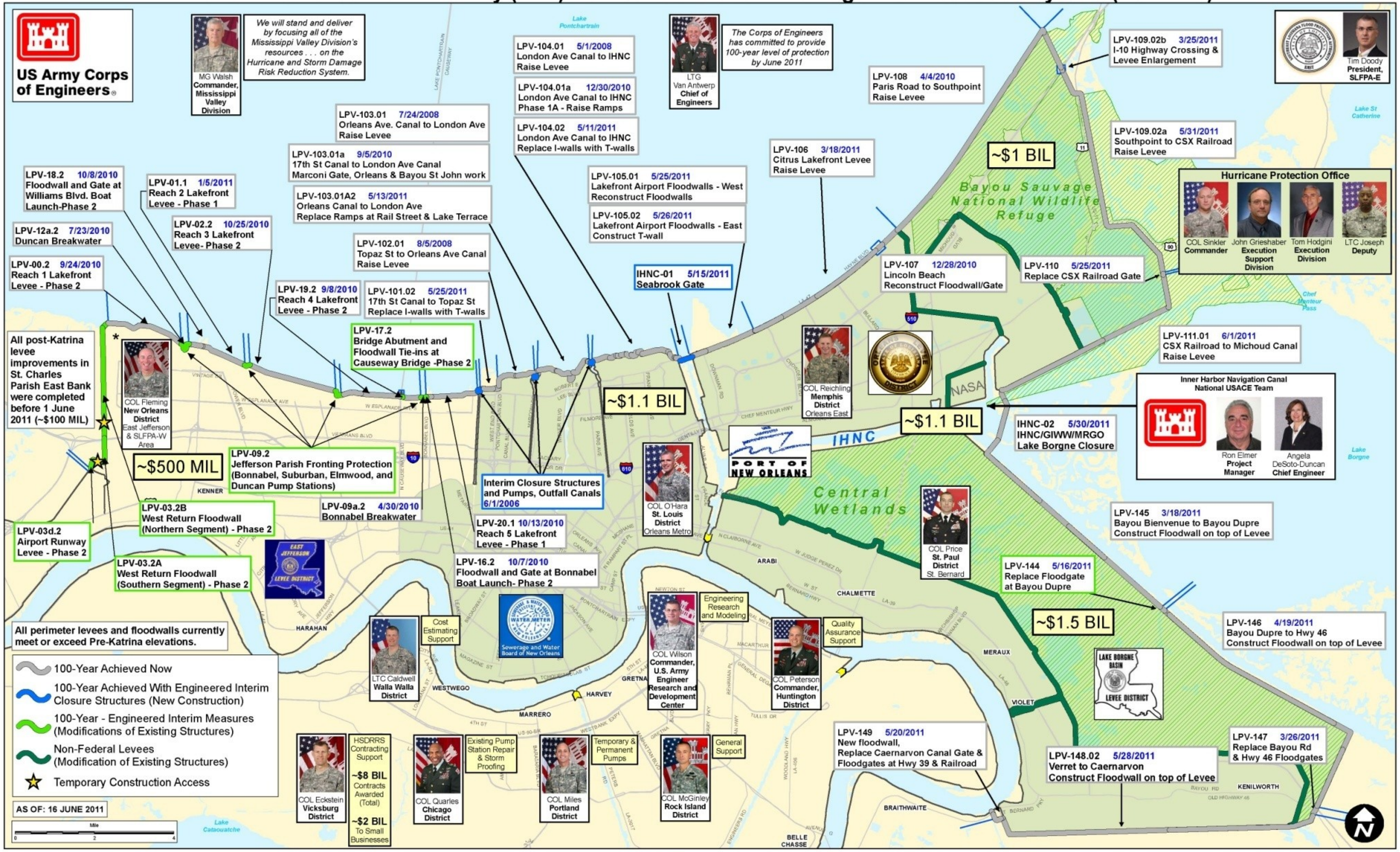
$~2.3 Bil (WBV)
~30 Perimeter Miles
~250,000 Population

* "Blue Circle" projects, Grand Isle, remediation, mitigation, SELA, NFL, MRL etc. not included ($0.85 Bil)

SLFPA-E Construction Status

Southeast Louisiana Flood Protection Authority - East (SLFPA-E) Perimeter 100-Year Project Status
Lake Pontchartrain and Vicinity (LPV) Hurricane and Storm Damage Risk Reduction System (HSDRRS)

Internal Draft Working Document


Lake Pontchartrain
Lake Pontchartrain Causeway
Bayou Sauvage National Wildlife Refuge
Central Wetlands
IHNC
NASA
Lake St Catherine
Chef Menteur Pass
Lake Borgne
Lake Cataouatche
KENNER
HARAHAN
WESTWEGO
MARRERO
HARVEY
GRETNA
ARABI
CHALMETTE
MERAUX
VIOLET
BRAITHWAITE
BELLE CHASSE
KENILWORTH
VINTAGE DR
W ESPLANADE AVE
VETERANS BLVD
POWER BLVD
N CAUSEWAY BLVD
BONNABEL BLVD
WEST END BLVD
PONTCHARTRAIN BLVD
CANAL BLVD
ROBERT E LEE BLVD
FILMORE AVE
PARIS AVE
CHEF MENTEUR HWY
HAYNE BLVD
MICHOUD BLVD
BULLARD
DOWNMAN RD
CROWDER BLVD
GENTILLY BLVD
N CLAIBORNE AVE
W JUDGE PEREZ DR
W ST BERNARD HWY
N RAMPART ST
MAGAZINE ST
TCHOUPITOULAS ST
PONTCHARTRAIN EXPY
WESTBANK EXPY
JEFFERSON HWY
BAYOU RD
OLD HIGHWAY 46
ST BERNARD PKY
10
510
610
11
90
LA-47
LA-39
LA-46
Mile
0
2
4
N
PORT OF NEW ORLEANS
EAST JEFFERSON LEVEE DISTRICT
Sewerage and Water Board of New Orleans
WATER METER
ORLEANS LEVEE DISTRICT
LAKE BORGNE BASIN LEVEE DISTRICT
US Army Corps of Engineers

MG Walsh
Commander, Mississippi Valley Division

We will stand and deliver by focusing all of the Mississippi Valley Division's resources . . . on the Hurricane and Storm Damage Risk Reduction System.

LTG Van Antwerp
Chief of Engineers

The Corps of Engineers has committed to provide 100-year level of protection by June 2011

Tim Doody
President, SLFPA-E

LPV-18.2 10/8/2010
Floodwall and Gate at Williams Blvd. Boat Launch-Phase 2

LPV-01.1 1/5/2011
Reach 2 Lakefront Levee - Phase 1

LPV-12a.2 7/23/2010
Duncan Breakwater

LPV-02.2 10/25/2010
Reach 3 Lakefront Levee- Phase 2

LPV-00.2 9/24/2010
Reach 1 Lakefront Levee - Phase 2

LPV-103.01 7/24/2008
Orleans Ave. Canal to London Ave
Raise Levee

LPV-103.01a 9/5/2010
17th St Canal to London Ave Canal
Marconi Gate, Orleans & Bayou St John work

LPV-103.01A2 5/13/2011
Orleans Canal to London Ave
Replace Ramps at Rail Street & Lake Terrace

LPV-102.01 8/5/2008
Topaz St to Orleans Ave Canal
Raise Levee

LPV-19.2 9/8/2010
Reach 4 Lakefront Levee - Phase 2

LPV-101.02 5/25/2011
17th St Canal to Topaz St
Replace I-walls with T-walls

LPV-17.2
Bridge Abutment and Floodwall Tie-ins at Causeway Bridge -Phase 2

LPV-104.01 5/1/2008
London Ave Canal to IHNC
Raise Levee

LPV-104.01a 12/30/2010
London Ave Canal to IHNC
Phase 1A - Raise Ramps

LPV-104.02 5/11/2011
London Ave Canal to IHNC
Replace I-walls with T-walls

LPV-105.01 5/25/2011
Lakefront Airport Floodwalls - West
Reconstruct Floodwalls

LPV-105.02 5/26/2011
Lakefront Airport Floodwalls - East
Construct T-wall

IHNC-01 5/15/2011
Seabrook Gate

LPV-106 3/18/2011
Citrus Lakefront Levee
Raise Levee

LPV-108 4/4/2010
Paris Road to Southpoint
Raise Levee

LPV-109.02b 3/25/2011
I-10 Highway Crossing & Levee Enlargement

LPV-109.02a 5/31/2011
Southpoint to CSX Railroad
Raise Levee

~$1 BIL

Hurricane Protection Office

COL Sinkler
Commander

John Grieshaber
Execution Support Division

Tom Hodgini
Execution Division

LTC Joseph
Deputy

LPV-107 12/28/2010
Lincoln Beach
Reconstruct Floodwall/Gate

LPV-110 5/25/2011
Replace CSX Railroad Gate

LPV-111.01 6/1/2011
CSX Railroad to Michoud Canal
Raise Levee

Inner Harbor Navigation Canal National USACE Team

Ron Elmer
Project Manager

Angela DeSoto-Duncan
Chief Engineer

IHNC-02 5/30/2011
IHNC/GIWW/MRGO
Lake Borgne Closure

~$1.1 BIL

All post-Katrina levee improvements in St. Charles Parish East Bank were completed before 1 June 2011 (~$100 MIL)

*

COL Fleming
New Orleans District
East Jefferson & SLFPA-W Area

~$500 MIL

LPV-09.2
Jefferson Parish Fronting Protection (Bonnabel, Suburban, Elmwood, and Duncan Pump Stations)

LPV-03.2B
West Return Floodwall (Northern Segment) - Phase 2

LPV-03d.2
Airport Runway Levee - Phase 2

LPV-03.2A
West Return Floodwall (Southern Segment) - Phase 2

LPV-09a.2 4/30/2010
Bonnabel Breakwater

Interim Closure Structures and Pumps, Outfall Canals
6/1/2006

LPV-20.1 10/13/2010
Reach 5 Lakefront Levee - Phase 1

LPV-16.2 10/7/2010
Floodwall and Gate at Bonnabel Boat Launch- Phase 2

~$1.1 BIL

COL Reichling
Memphis District
Orleans East

COL O'Hara
St. Louis District
Orleans Metro

COL Price
St. Paul District
St. Bernard

LPV-145 3/18/2011
Bayou Bienvenue to Bayou Dupre
Construct Floodwall on top of Levee

LPV-144 5/16/2011
Replace Floodgate at Bayou Dupre

~$1.5 BIL

LPV-146 4/19/2011
Bayou Dupre to Hwy 46
Construct Floodwall on top of Levee

All perimeter levees and floodwalls currently meet or exceed Pre-Katrina elevations.

- 100-Year Achieved Now
- 100-Year Achieved With Engineered Interim Closure Structures (New Construction)
- 100-Year - Engineered Interim Measures (Modifications of Existing Structures)
- Non-Federal Levees (Modification of Existing Structures)
- ★ Temporary Construction Access

AS OF: 16 JUNE 2011

LTC Caldwell
Walla Walla District

Cost Estimating Support

COL Wilson
Commander, U.S. Army Engineer Research and Development Center

Engineering Research and Modeling

COL Peterson
Commander, Huntington District

Quality Assurance Support

COL Eckstein
Vicksburg District

HSDRRS Contracting Support
~$8 BIL
Contracts Awarded (Total)
~$2 BIL
To Small Businesses

COL Quarles
Chicago District

Existing Pump Station Repair & Storm Proofing

COL Miles
Portland District

Temporary & Permanent Pumps

COL McGinley
Rock Island District

General Support

LPV-149 5/20/2011
New floodwall,
Replace Caernarvon Canal Gate & Floodgates at Hwy 39 & Railroad

LPV-148.02 5/28/2011
Verret to Caernarvon
Construct Floodwall on top of Levee

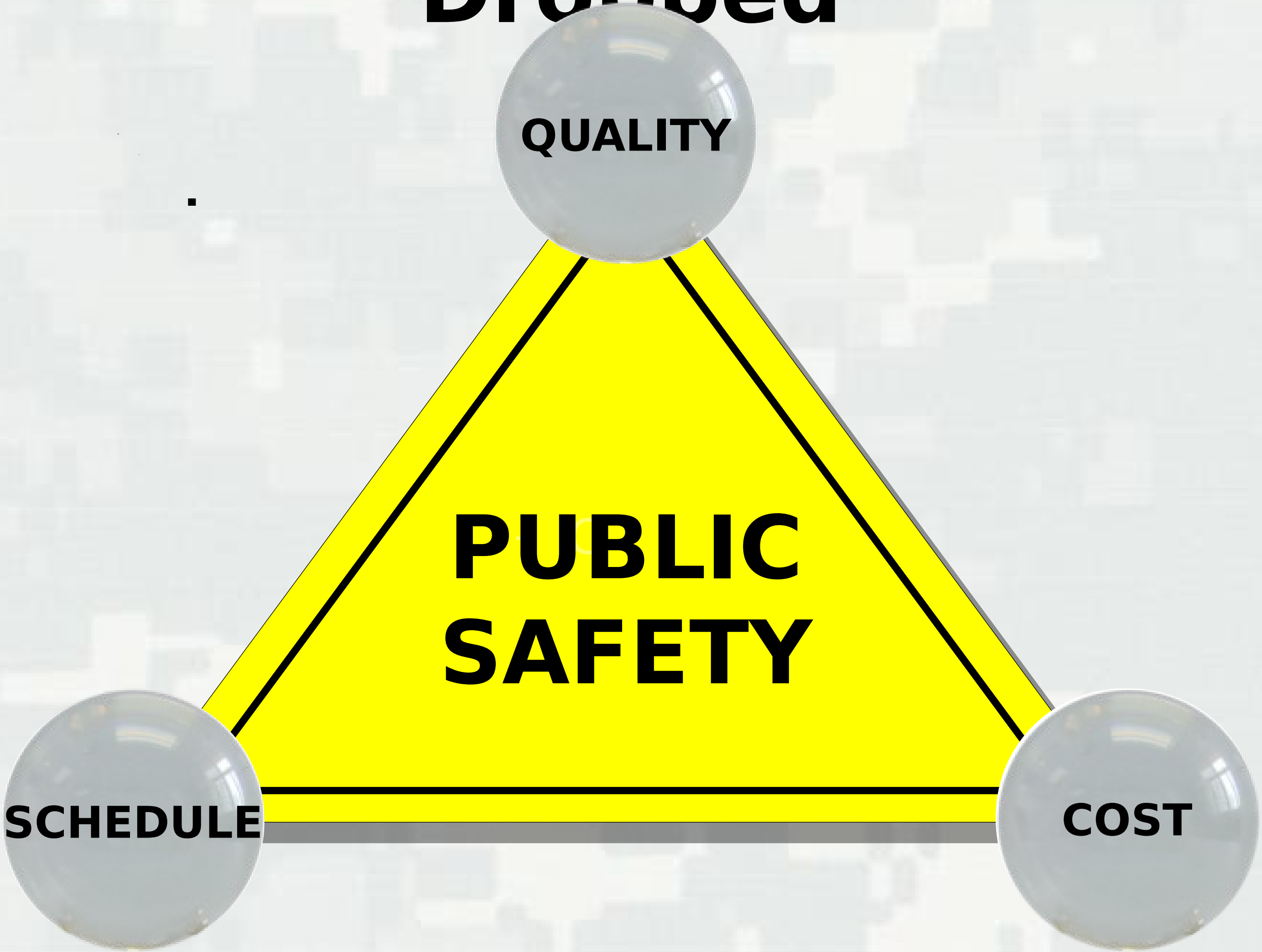
LPV-147 3/26/2011
Replace Bayou Rd & Hwy 46 Floodgates

Internal Draft Working Document

* Responsible for providing additional engineering, technical, administrative and logistics support to the SLFPA-E area as needed

Blue - 100-Year Level Attained Dates as of 9 JUNE 2011

3 Glass Balls that Cannot Be Dropped


QUALITY
PUBLIC SAFETY
SCHEDULE
COST

PUBLIC SAFETY DEPENDS ON ALL 3…

Three Strategic Improvements of the Hurricane and Storm Damage Risk Reduction System (HSDRRS)

1. **Block five storm surge avenues** from a 100-year storm surge.

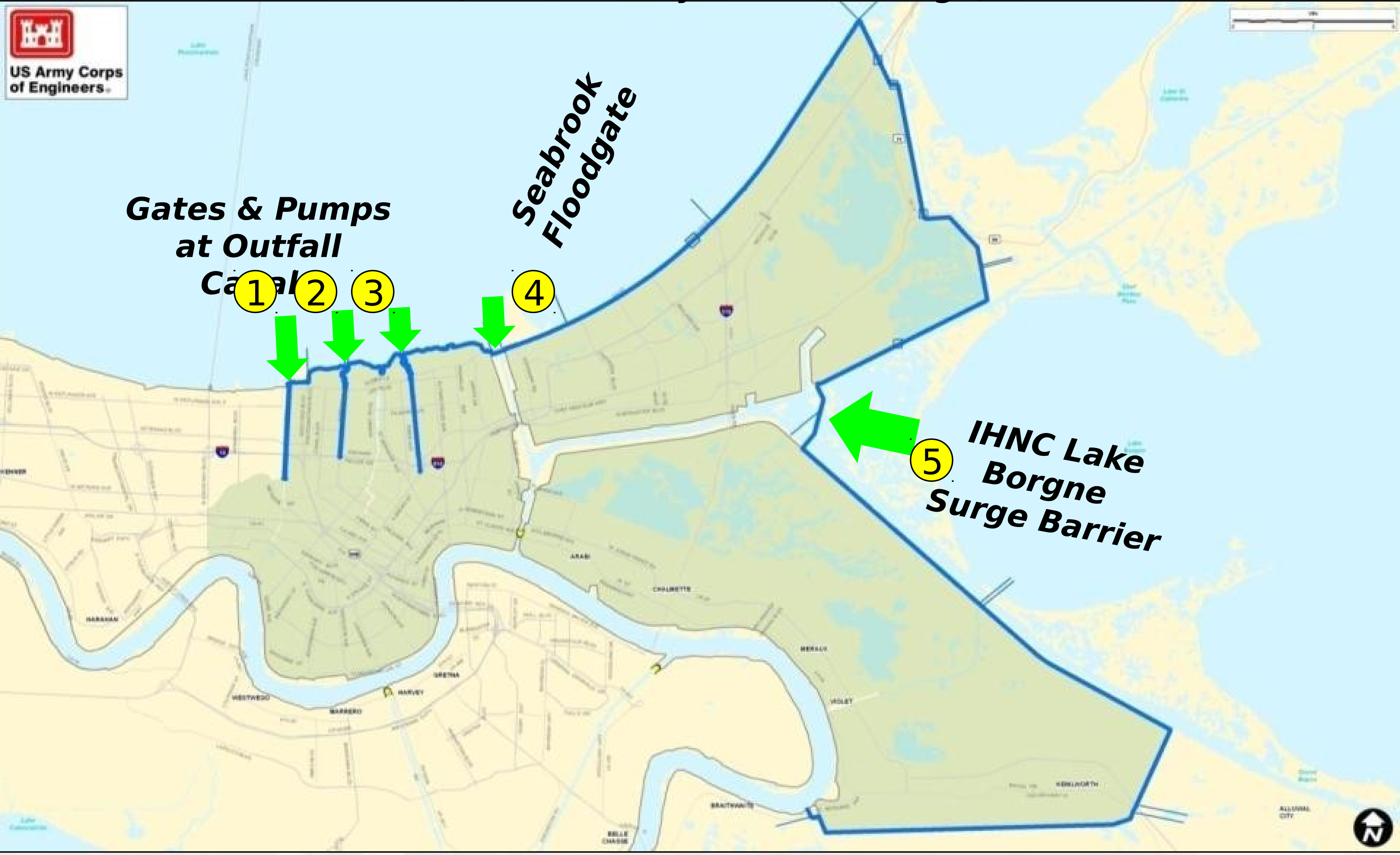
2. Raise and strengthen levees and floodwalls to the **same design guidelines**.

3. **Storm proof key pump stations** so they can function when there is flooding in the city.

Block The Five Storm Surge Avenue

(From a 100-year storm surge)

US Army Corps of Engineers

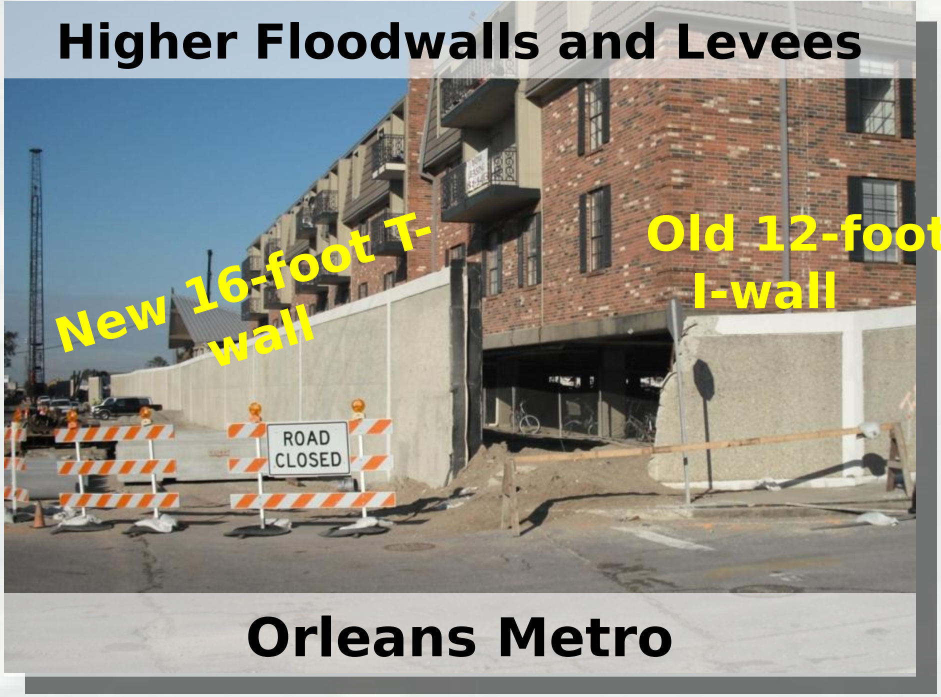

KENNER
HARAHAN
WESTWEGO
MARRERO
HARVEY
GRETNA
ARABI
CHALMETTE
MERAUX
VIOLET
BRAITHWAITE
BELLE CHASSE
KENILWORTH
ALLUVIAL CITY
1
2
3
4
5

Gates & Pumps at Outfall Canals

Seabrook Floodgate

IHNC Lake Borgne Surge Barrier

Raise and Strengthen Levees / Floo

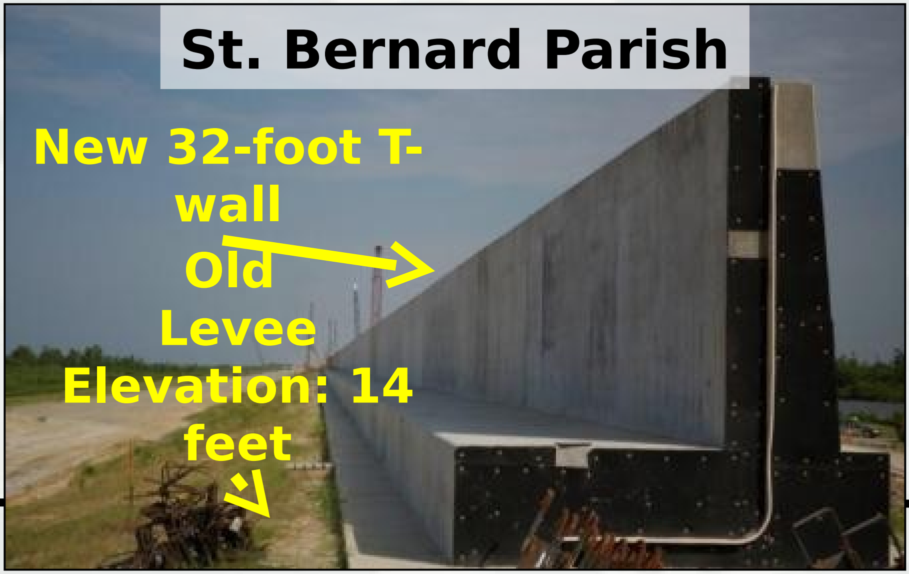


Higher Floodwalls and Levees

New 16-foot T-wall

Old 12-foot I-wall

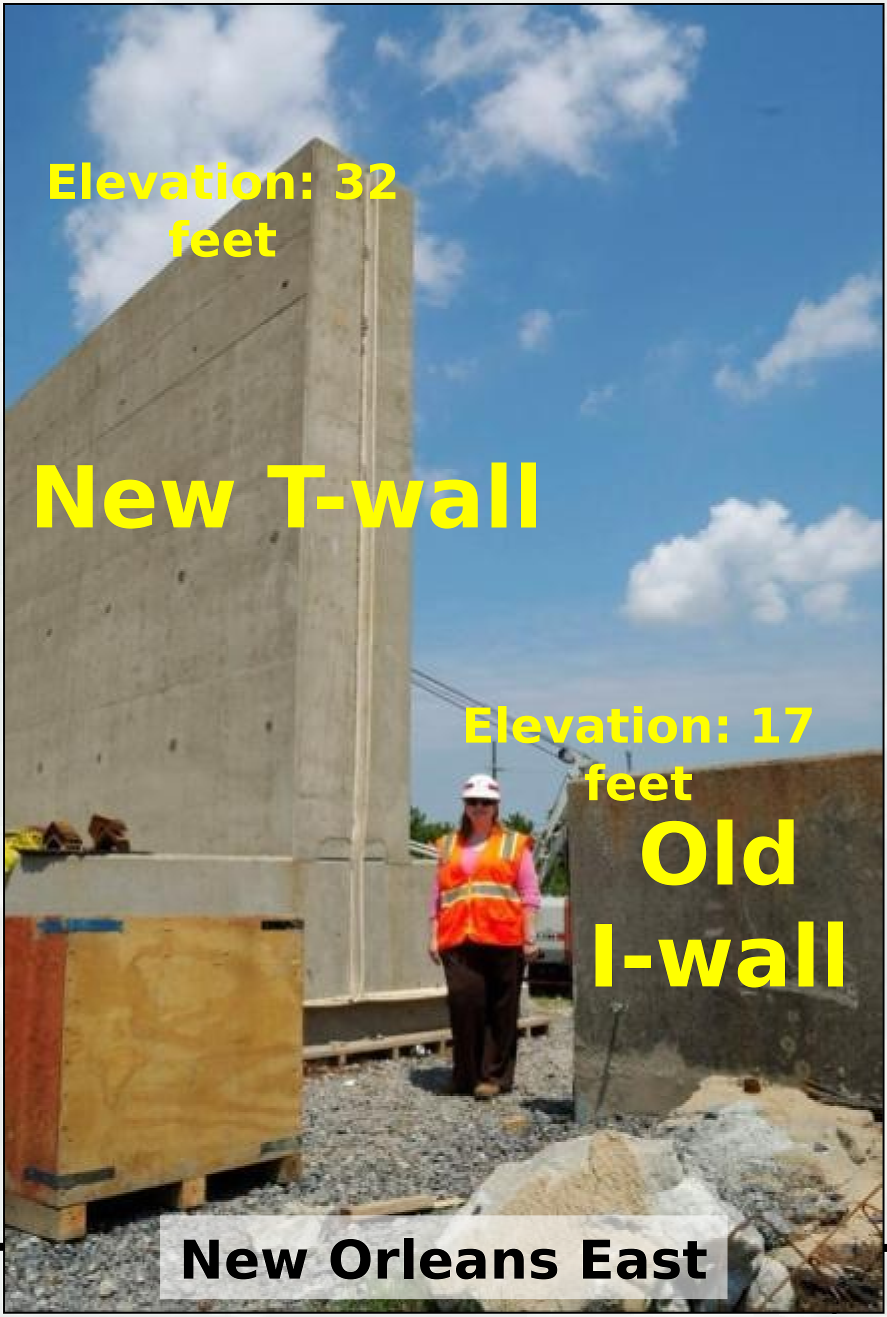
Orleans Metro



St. Bernard Parish

New 32-foot T-wall

Old Levee Elevation: 14 feet



Elevation: 32 feet

New T-wall

Elevation: 17 feet

Old I-wall

New Orleans East

Storm Proof Key Pump Stations

Repair 61 pump stations ($103 Mil)

Storm proof 49 pump stations ($322 Mil)

Construct 5 safe houses ($18 Mil)

A Priority of Two Administrations

“Now, even as we continue our recovery efforts, we're also focusing on preparing for future threats so that there is never another disaster like Katrina. ***The largest civil works project in American history*** *is underway to build a fortified levee system. And as I — just as I pledged as a candidate,* ***we're going to finish this system by next year so that this city is protected against a 100-year storm.”***

President Barack Obama

Xavier University, New Orleans

August 29, 2010

"…The way to address [the Hurricane and Storm Damage Risk Reduction System] is to deliver."

Gen. George W. Casey, Jr.
Chief of Staff
U.S. Army

“The Corps of Engineers has committed to provide 100-year level of protection by June 2011.”

Lt. Gen. Robert L. Van Antwerp
Commanding General
U.S. Army Corps of Engineers

“We will stand and deliver by focusing all of the Mississippi Valley Division’s resources…on the Hurricane and Storm Damage Risk Reduction System.”

Maj. Gen. Michael J. Walsh
Commander
Mississippi Valley Division

“We do have the best protection in the area that we’ve ever had…We learned very important lessons from Katrina about how we need to approach flood protection in a systems-based manner, and that protection needs to be coupled with ecosystem restoration…We can’t allow the country, the Corps and the world to forget those messages..”

Garret Graves

Chairman

Coastal Protection and Restoration Authority

“The Southeast Louisiana Flood Protection Authority-East looks forward to the completion of the Hurricane and Storm Damage Risk Reduction System, which will be a signal to the region and the world that Hurricane Katrina is behind us. Achieving this level of protection in 2011 will be a milestone in the ongoing effort to protect the greater New Orleans area from a 100-year storm event. We continue to work with our Federal, State and Local partners to make sure that we have a technically superior product delivered with our operations and maintenance concerns addressed. Our Authority will continue to work toward a higher level of protection – protection from a surge associated with a 500-year event.

Tim Doody

Executive Director

SLFPA-East

“The Corps has done their job here. They’ve done it on time. They’ve done it under budget…it’s quite impressive… and it’s going to give us much greater protection than we had before. But, we have a very long way to go.”

Mitch Landrieu *at the Lake Borgne Surge Barrier*
Mayor
The City of New Orleans

lity, schedule and cost are all important for public safety!

“There is absolutely no ambiguity in our mission. We have a major U.S. coastal city without satisfactory 100-year storm surge protection. Before the start of Hurricane Season (1 June) 2011, we will design and build a high-quality 100-mile storm surge perimeter system capable of defending the City of New Orleans against a 100-year storm surge, using the resources the People of our Nation have provided.

Project Enablers

- Commitment from *both* the Administration and Congress
- $14.45 Bil Fully Authorized and Funded
- National Environmental Protection Act (NEPA) Alternative Arrangements

Saves Time & Reduces Cost

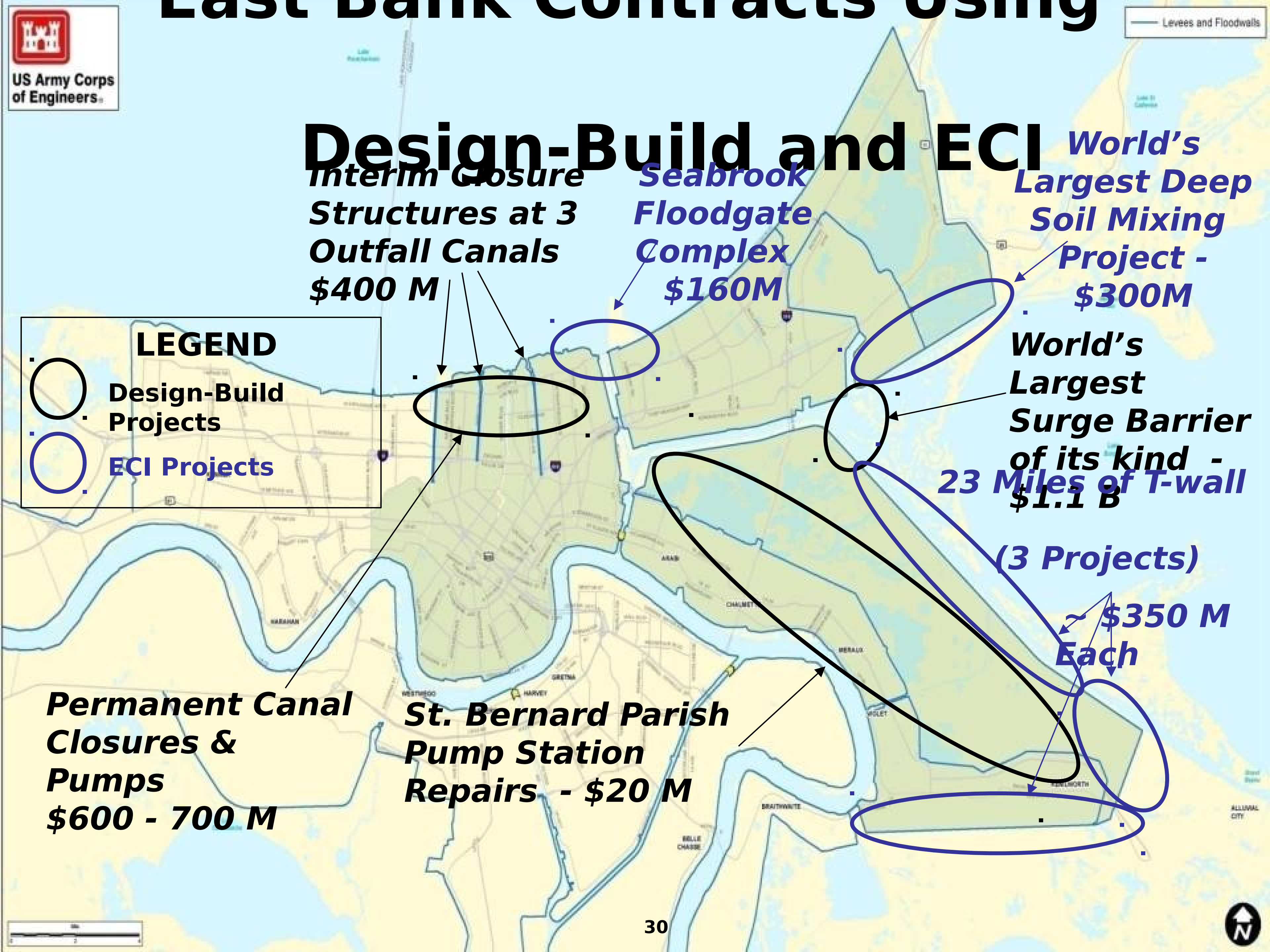
Innovative Project Delivery Methods

- Design Build
- Early Contractor Involvement (ECI)

Saves Time & Avoids Costs ssociated with Contractor Risk!

US Army Corps of Engineers

East Bank Contracts Using Design-Build and ECI


Levees and Floodwalls
HARAHAN
WESTWEGO
HARVEY
GRETNA
ARABI
CHALMETTE
MERAUX
VIOLET
KENILWORTH
BRAITHWAITE
BELLE CHASSE
ALLUVIAL CITY

LEGEND

- ○ **Design-Build Projects**
- ○ **ECI Projects**

Interim Closure Structures at 3 Outfall Canals $400 M

Seabrook Floodgate Complex $160M

World's Largest Deep Soil Mixing Project - $300M

World's Largest Surge Barrier of its kind - $1.1 B

23 Miles of T-wall (3 Projects) ~ $350 M Each

Permanent Canal Closures & Pumps $600 - 700 M

St. Bernard Parish Pump Station Repairs - $20 M

Innovative Project Delivery Teams

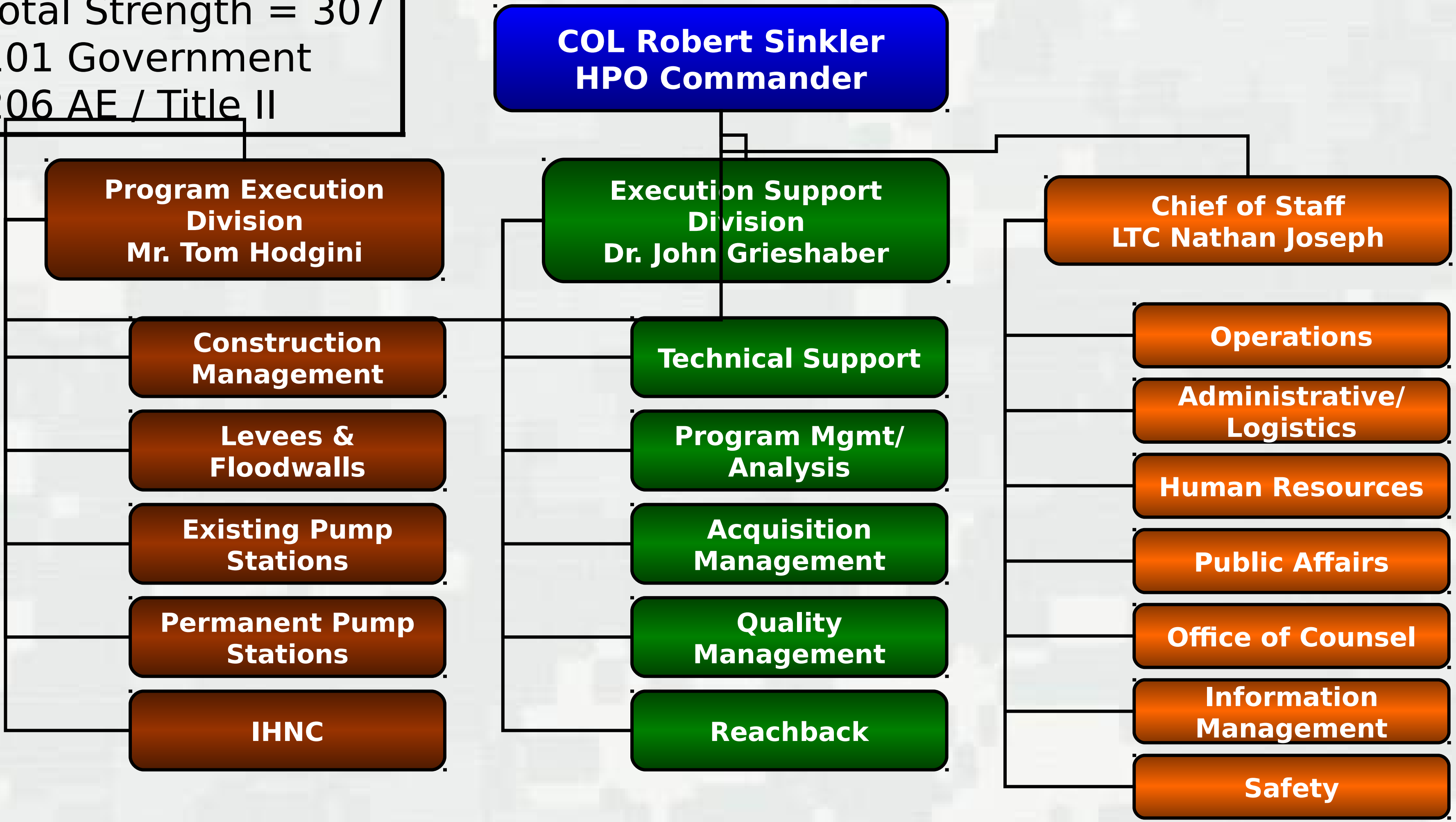
- Created National and Regional Delivery Teams

- Project Delivery vs. Functional Organizati

Maximized Expertise Available
Reduced Decision Making Time

Design Build - Organizational Structure

Total Strength = 307
101 Government
206 AE / Title II

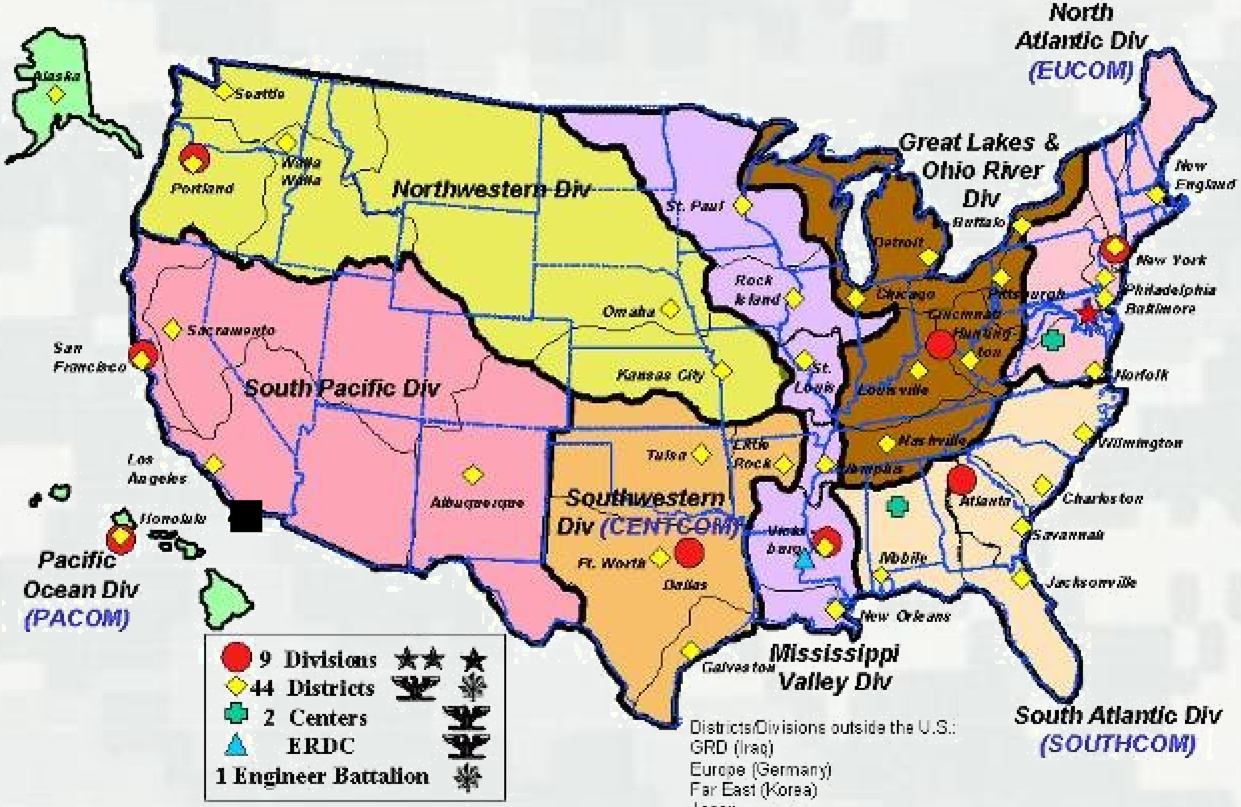


COL Robert Sinkler
HPO Commander

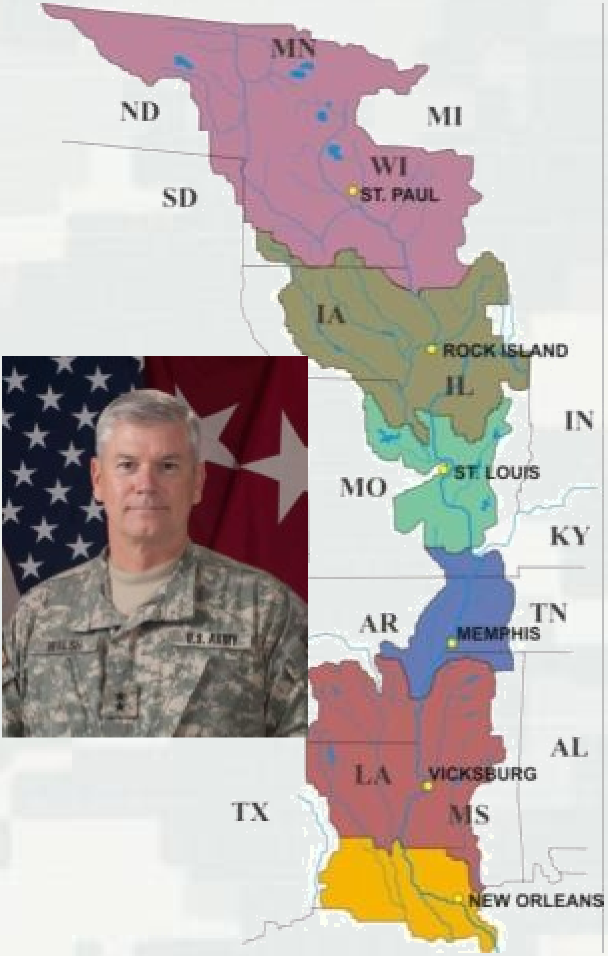
- **Program Execution Division**
  Mr. Tom Hodgini
  - Construction Management
  - Levees & Floodwalls
  - Existing Pump Stations
  - Permanent Pump Stations
  - IHNC
- **Execution Support Division**
  Dr. John Grieshaber
  - Technical Support
  - Program Mgmt/ Analysis
  - Acquisition Management
  - Quality Management
  - Reachback
- **Chief of Staff**
  LTC Nathan Joseph
  - Operations
  - Administrative/ Logistics
  - Human Resources
  - Public Affairs
  - Office of Counsel
  - Information Management
  - Safety

The U.S. Army Corps of Engineers Team

- **People:**
  - Corps wide - 34,000
  - Civil Works - 24,000
  - MVD - 5,000


North Atlantic Div (EUCOM)
Great Lakes & Ohio River Div
Northwestern Div
South Pacific Div
Southwestern Div (CENTCOM)
Mississippi Valley Div
South Atlantic Div (SOUTHCOM)
Pacific Ocean Div (PACOM)
Alaska
Seattle
Walla Walla
Portland
St. Paul
Rock Island
Omaha
Kansas City
Sacramento
San Francisco
Los Angeles
Honolulu
Albuquerque
Tulsa
Little Rock
Ft. Worth
Dallas
Galveston
Vicksburg
New Orleans
Memphis
Nashville
Louisville
St. Louis
Chicago
Detroit
Buffalo
Pittsburgh
Cincinnati
Huntington
New England
New York
Philadelphia
Baltimore
Norfolk
Wilmington
Charleston
Savannah
Atlanta
Mobile
Jacksonville
9 Divisions
44 Districts
2 Centers
ERDC
1 Engineer Battalion

Districts/Divisions outside the U.S.:
GRD (Iraq)
Europe (Germany)
Far East (Korea)
Japan


ND
SD
MN
MI
WI
ST. PAUL
IA
ROCK ISLAND
IL
IN
MO
ST. LOUIS
KY
AR
TN
MEMPHIS
TX
LA
VICKSBURG
MS
AL
NEW ORLEANS

The Delivery Team Includes:

Alberici Constructors
AN ALBERICI ENTERPRISE

cycle construction COMPANY, LLC

TETRA TECH

WESTON SOLUTIONS

EUSTIS
Metairie, Louisiana
Lafayette, Louisiana
Gulfport, Mississippi

TREVIICOS CORPORATION

ARCHER WESTERN CONTRACTORS

PBS&J

GARNER SERVICES, LLC

Patterson

dii dynamic

QE QUALITY ENTERPRISES USA, INC.

Ardaman & Associates, Inc.

EC

HDR

Shaw

JV INCA Gerwick

MWI PUMPS

IPS CONSTRUCTION

TMW TRAYLOR • MASSMAN • WEEKS, LLC

BLACK & VEATCH

HNTB

BARRIERE CONSTRUCTION CO., L.L.C.

MERRICK CONSTRUCTION, LLC COTTONPORT, LA

Bioengineering ARCADIS

C.J. Mahan Construction Company

MANSON CONSTRUCTION CO.

LINFIELD, HUNTER & JUNIUS, INC.

L&A ENGINEERS • CONTRACTORS • CONTRACTING CO. • HATTIESBURG, MS

IPS CONSTRUCTION

CHALMETTE LEVEE CONSTRUCTORS

BOLAND

Nelson

BOH BROS. CONSTRUCTION CO., LLC SAFETY PAYS

St. Bernard Levee Partners

URS

CAJUN INDUSTRIES, LLC

CAYO, LP

Hamp's Construction LLC

Design Engineering, Inc.

AECOM

Conti The Conti Group

rcg ENTERPRISES INC

Baker Ready Mix & Building Materials

PKS Kiewit

AQUATERRA CONTRACTING, INC.

Committed to ensuring that New Orleans can handle a 100-year storm surge by 1 June 2011.

Did we miss you? Please email your logo to Nicholas.L.Silbert@usace.army.mil

Our Teammates Include:

NATIONAL WILDLIFE FEDERATION

American Rivers
Thriving By Nature

America's WETLAND
Campaign to Save Coastal Louisiana

Coast 2050

USGS
science for a changing world

The Nature Conservancy
Protecting nature. Preserving life.

SEAL OF THE PRESIDENT OF THE UNITED STATES

Sewerage and Water Board of New Orleans

Regional Planning Commission

Port of South Louisiana

Center for Planning Excellence

Audubon

United States Environmental Protection Agency

CRMS

Louisiana Wildlife & Fisheries

Gulf Restoration Network

Sierra Club
Founded 1892

CPRA
Coastal Protection and Restoration Authority of Louisiana

Southeast Louisiana Flood Protection Authority East

GICA

EDF
Environmental Defense Fund
Finding the ways that work

NRCS

Wildlife Habitat Council

Waterways Council, Inc.

Ducks Unlimited

Louisiana Recovery Authority

Louisiana Department of Natural Resources

Orleans Levee District

Louisiana's on the move. DOTD builds the way

U.S. Fish & Wildlife Service

State of Louisiana

Tulane University

NOAA
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

Port of New Orleans

Center for Watershed Protection

AWO

FEMA

The University of New Orleans

Lake Pontchartrain Basin Foundation
Save Our Coast Save Our Lake

Lake Borgne Basin Levee District

Louisiana Land & Water Foundation

Working together to ensure that New Orleans can handle a 100-year storm surge by 1 June 2011.

Did we miss you? Please email your logo to Nicholas.L.Silbert@usace.army.mil

A few of our key stakeholders include…

Garret Graves
Chairman, OCPR

Tim Doody
President, SLFPA-East

Mitch Landrieu
Mayor, City of New Orleans

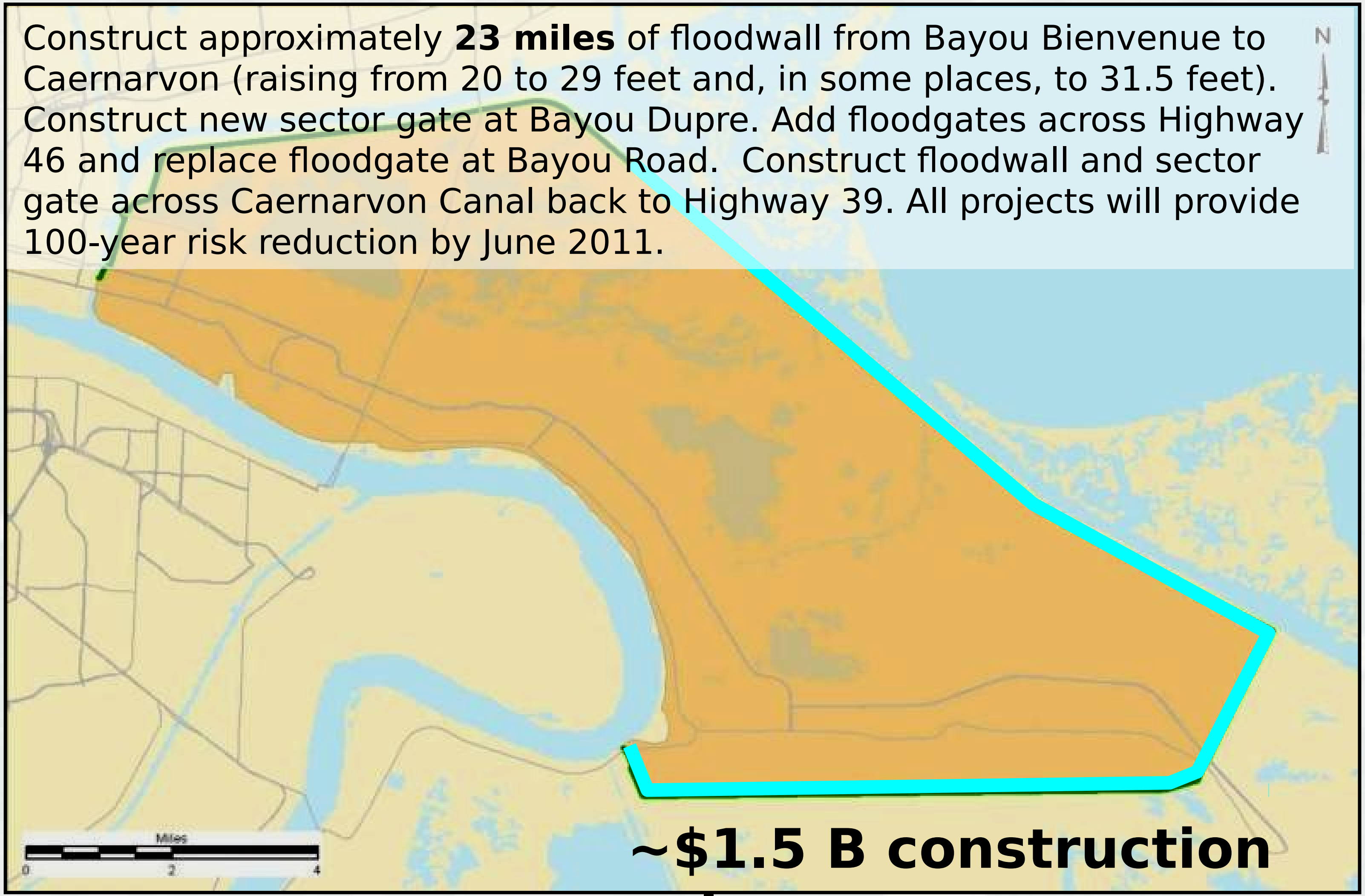
Craig Taffaro
President, St. Bernard Parish

John Young
President, Jefferson Parish

Marcia St. Martin
Executive Director, Sewerage and Water Board of New Orleans

Gary LaGrange
President & CEO, Port of New Orleans

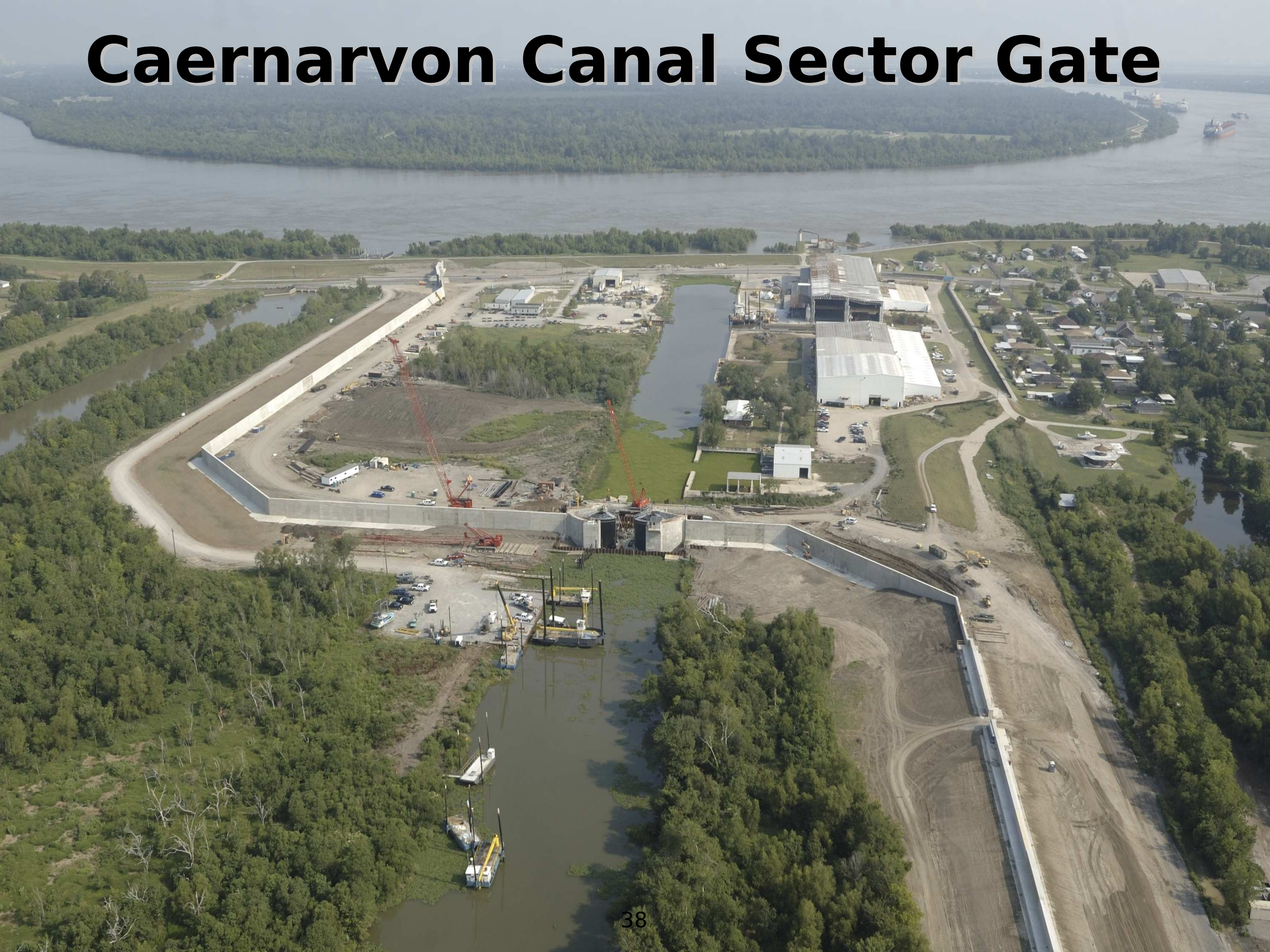
St. Bernard Parish



Construct approximately **23 miles** of floodwall from Bayou Bienvenue to Caernarvon (raising from 20 to 29 feet and, in some places, to 31.5 feet). Construct new sector gate at Bayou Dupre. Add floodgates across Highway 46 and replace floodgate at Bayou Road. Construct floodwall and sector gate across Caernarvon Canal back to Highway 39. All projects will provide 100-year risk reduction by June 2011.

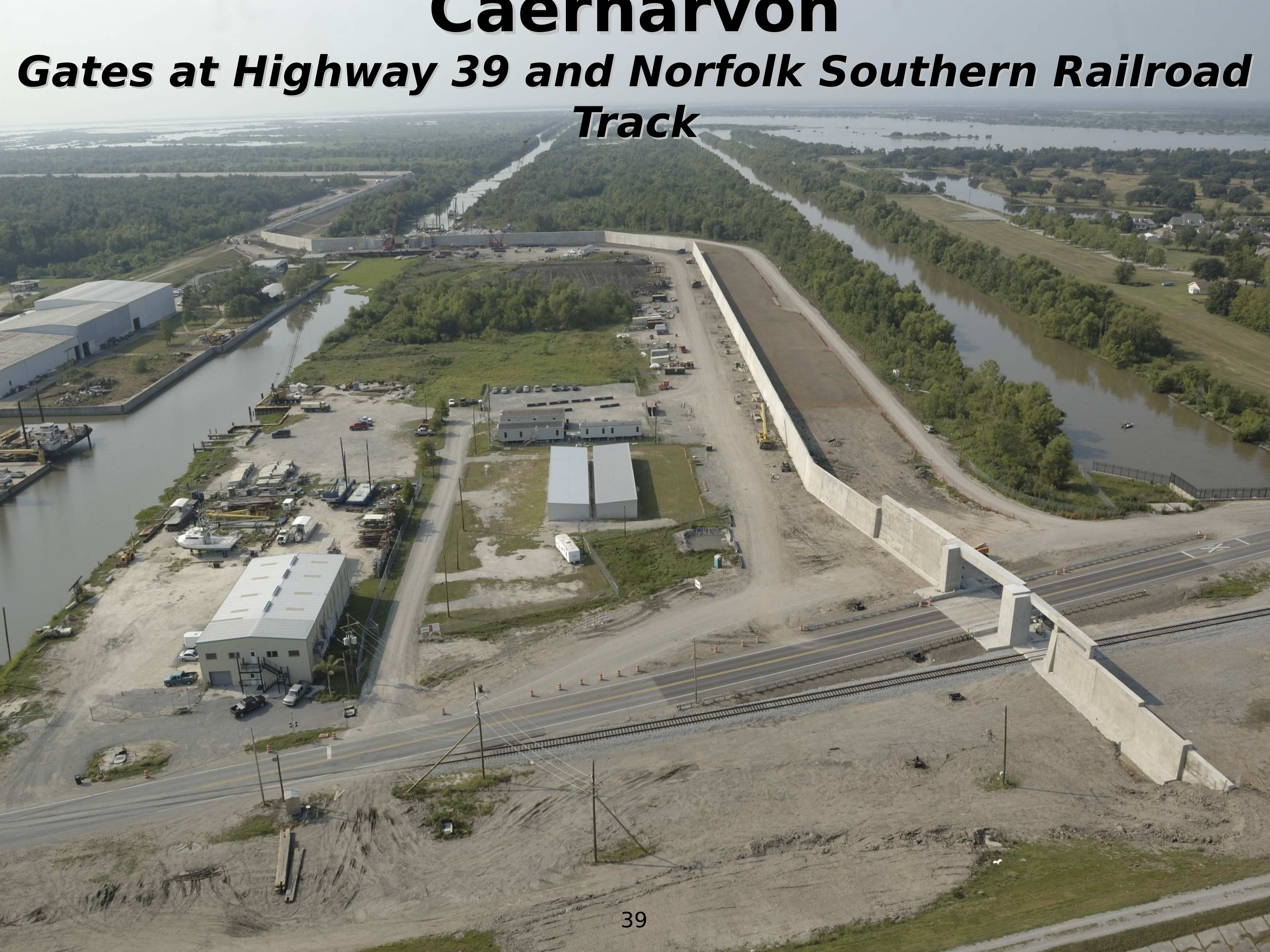
~$1.5 B construction value

Caernarvon Canal Sector Gate

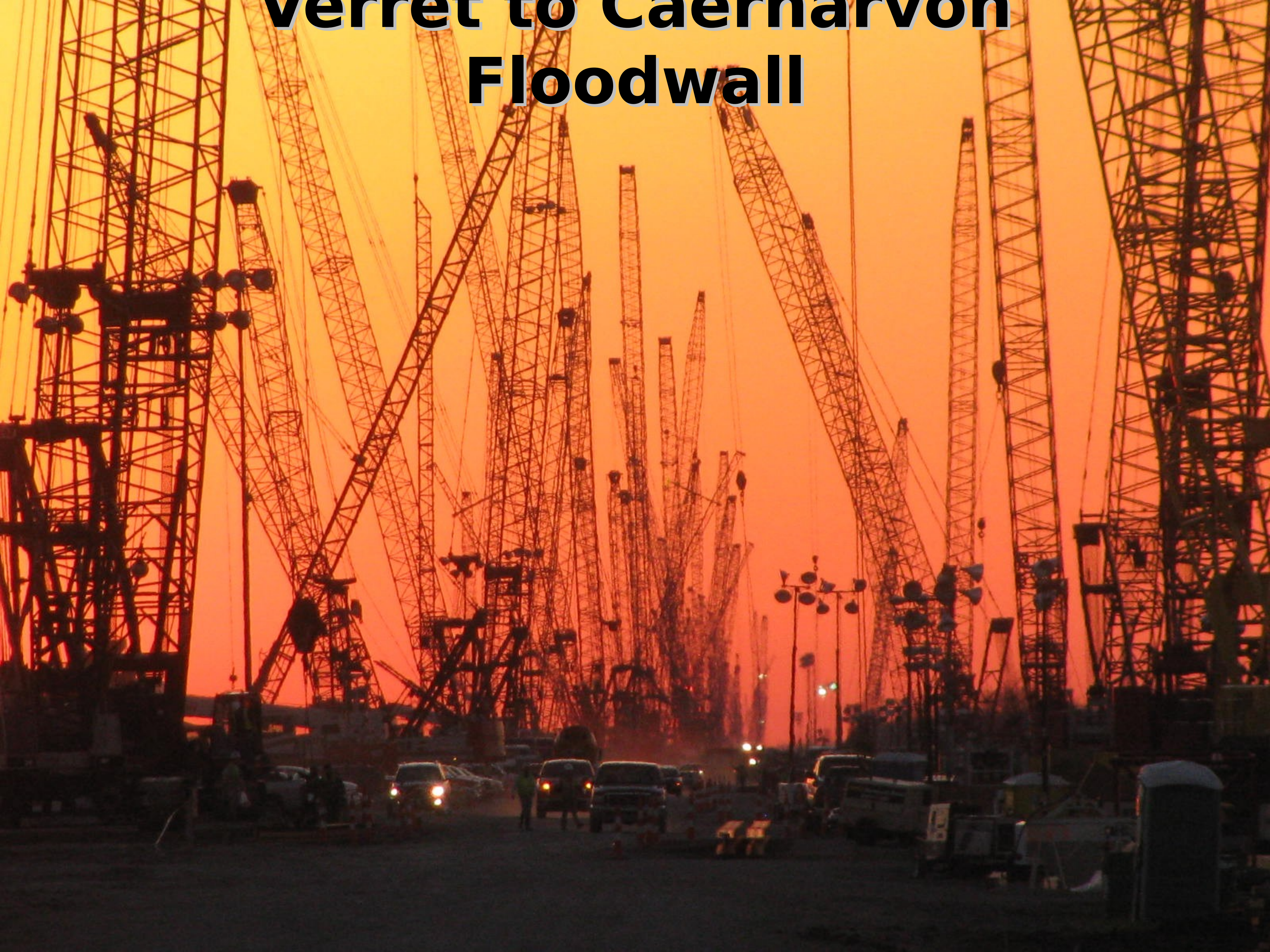


Caernarvon

Gates at Highway 39 and Norfolk Southern Railroad Track

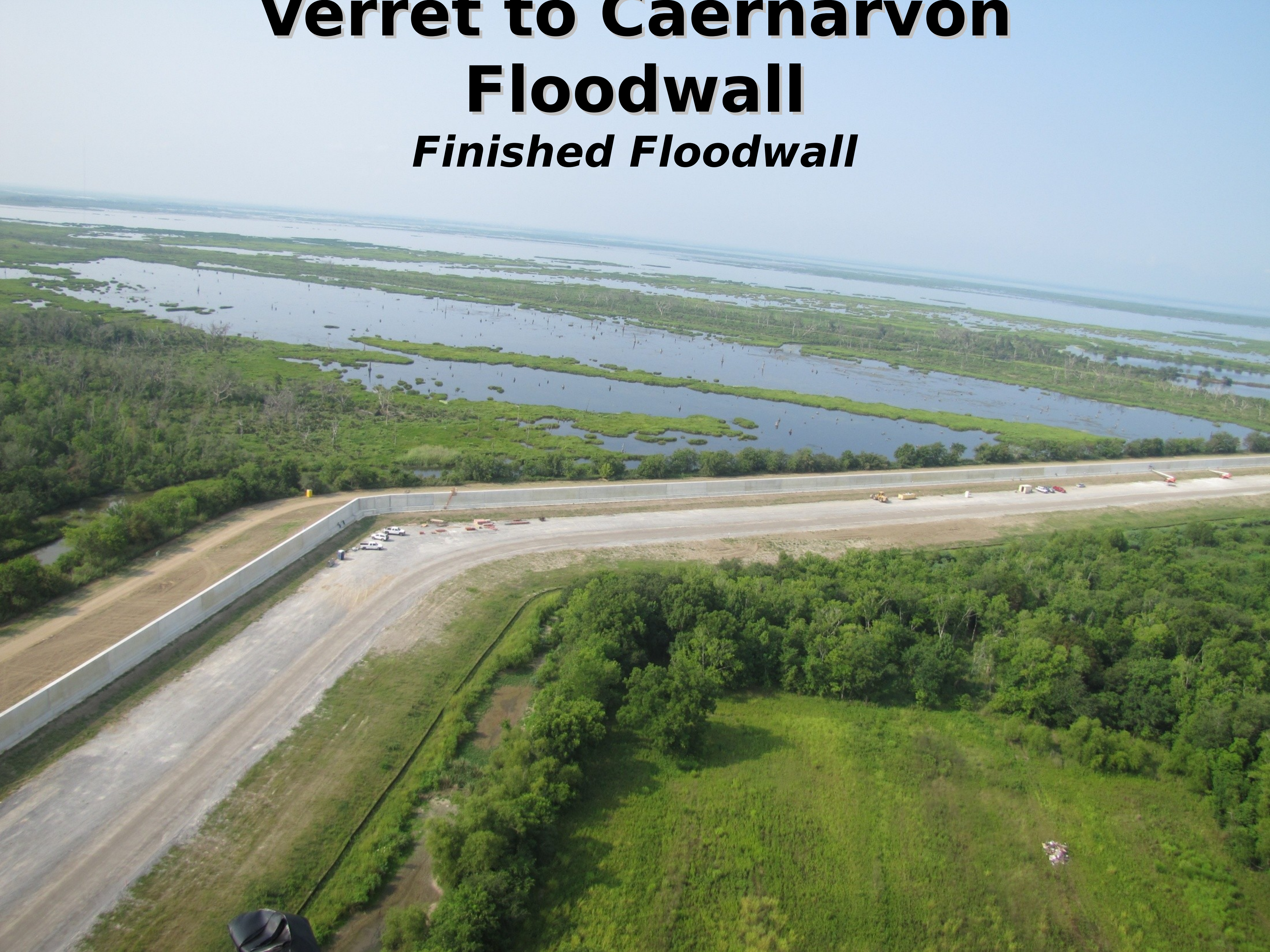


Verret to Caernarvon Floodwall

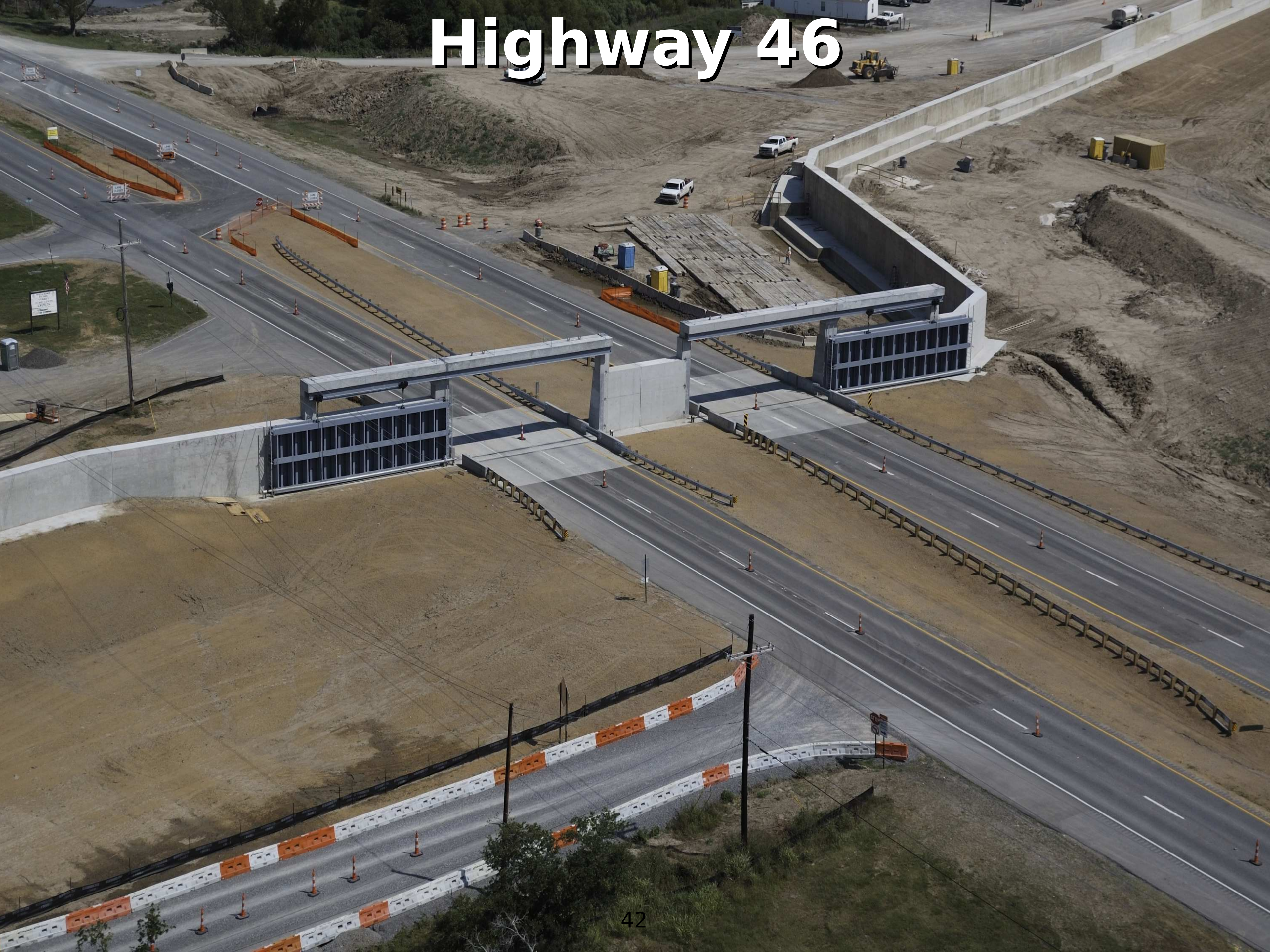


Verret to Caernarvon Floodwall

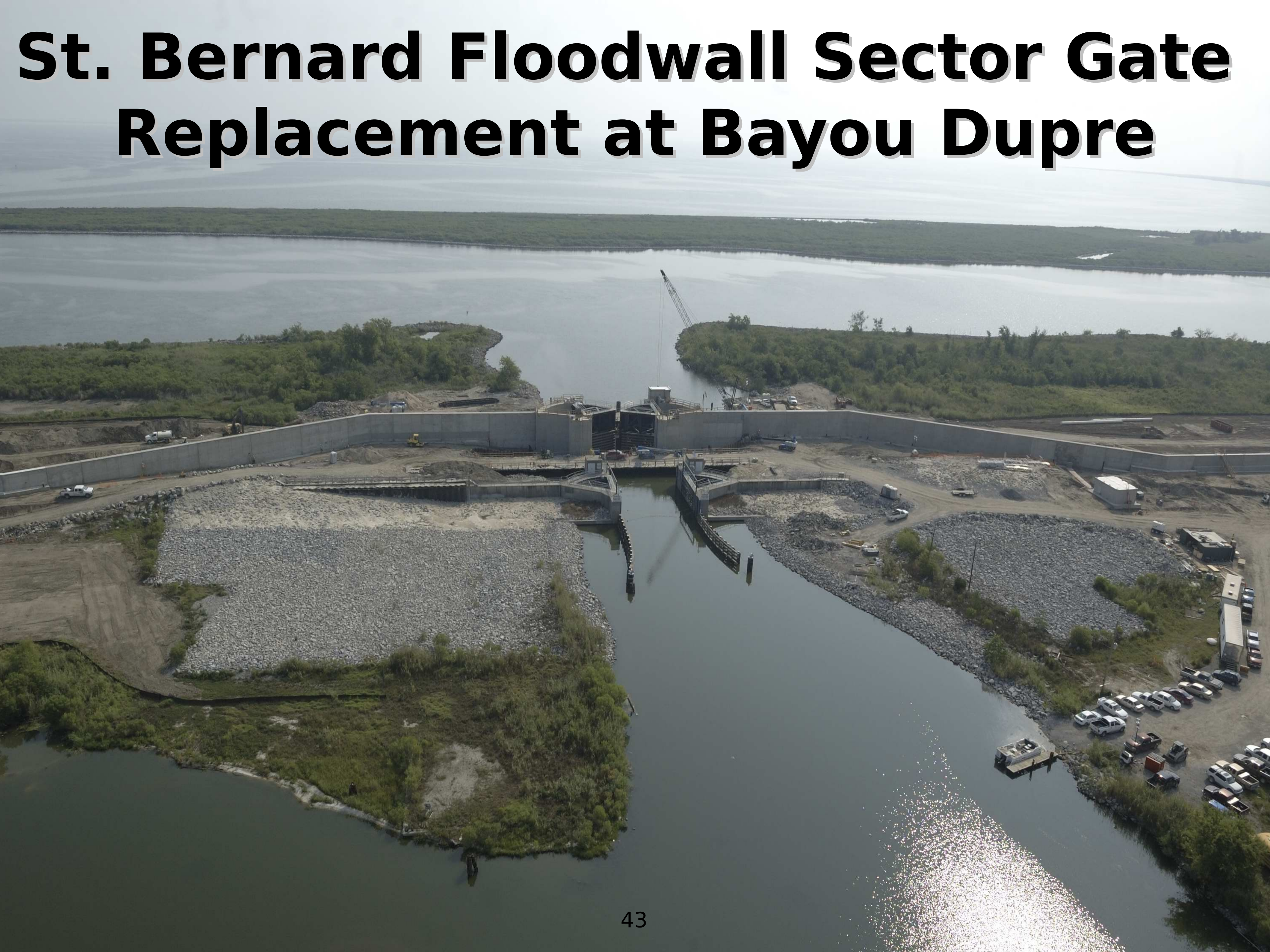
Finished Floodwall



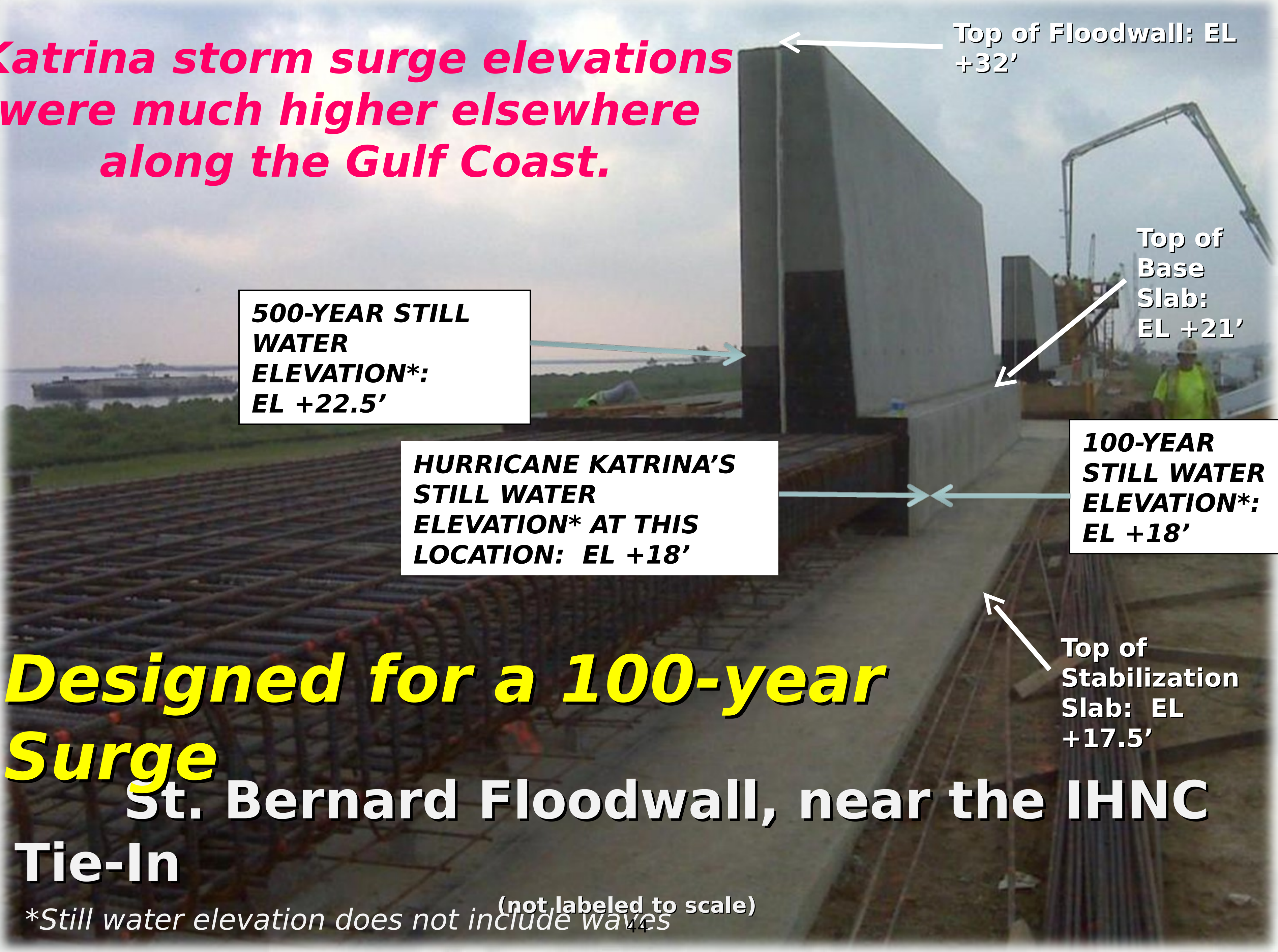
Highway 46



St. Bernard Floodwall Sector Gate Replacement at Bayou Dupre



Katrina storm surge elevations were much higher elsewhere along the Gulf Coast.



Top of Floodwall: EL +32’

Top of Base Slab: EL +21’

500-YEAR STILL WATER ELEVATION*: EL +22.5’

HURRICANE KATRINA’S STILL WATER ELEVATION* AT THIS LOCATION: EL +18’

100-YEAR STILL WATER ELEVATION*: EL +18’

Top of Stabilization Slab: EL +17.5’

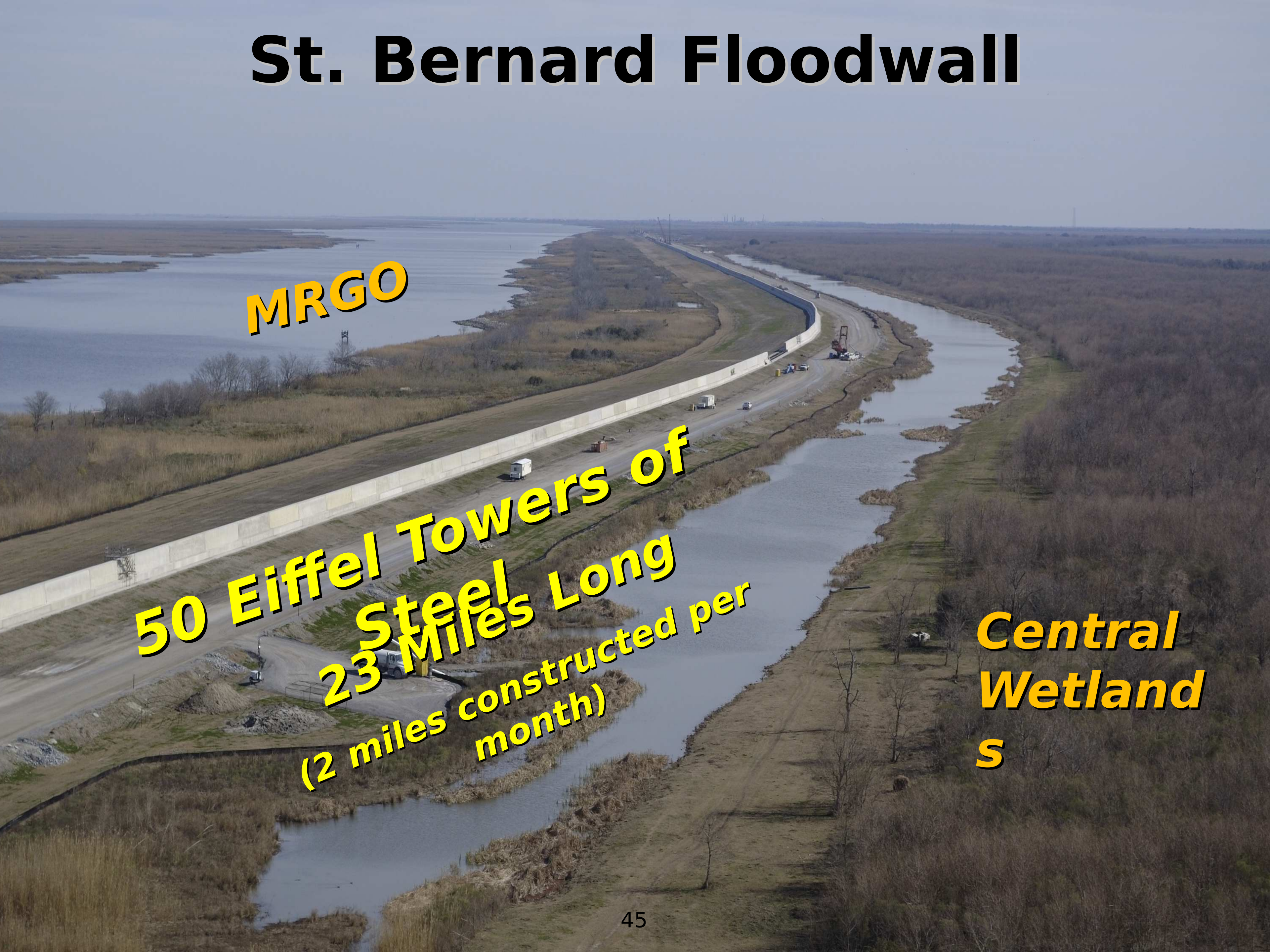
Designed for a 100-year Surge

St. Bernard Floodwall, near the IHNC Tie-In

(not labeled to scale)

*Still water elevation does not include waves

St. Bernard Floodwall


MRGO
Central Wetlands

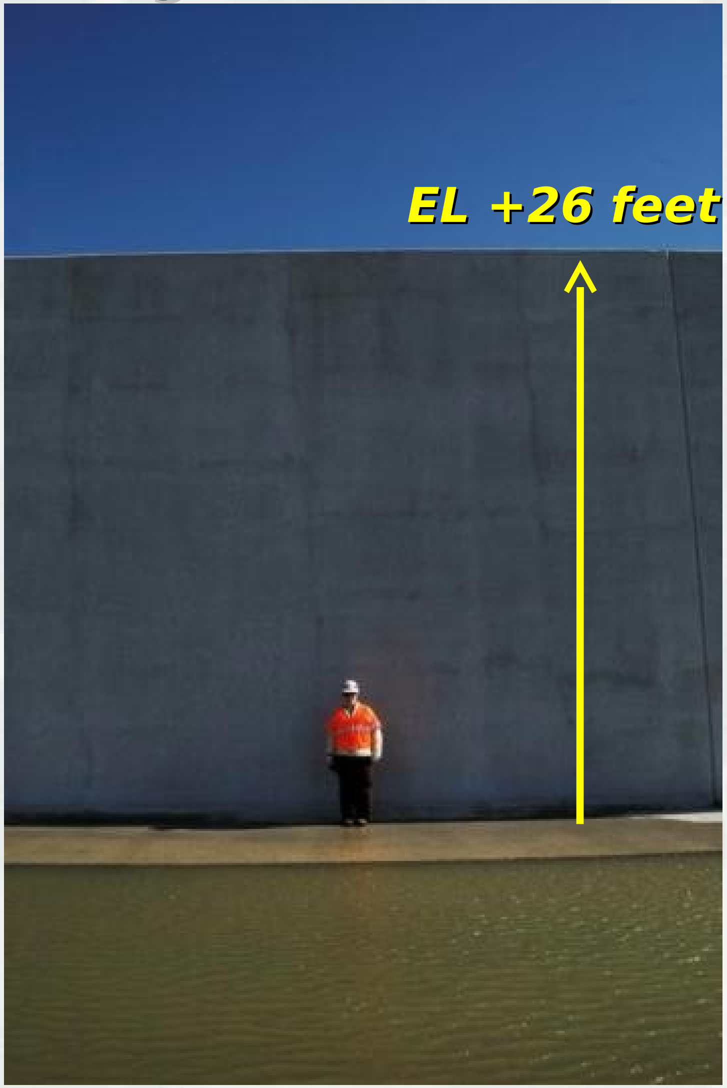
50 Eiffel Towers of Steel

23 Miles Long

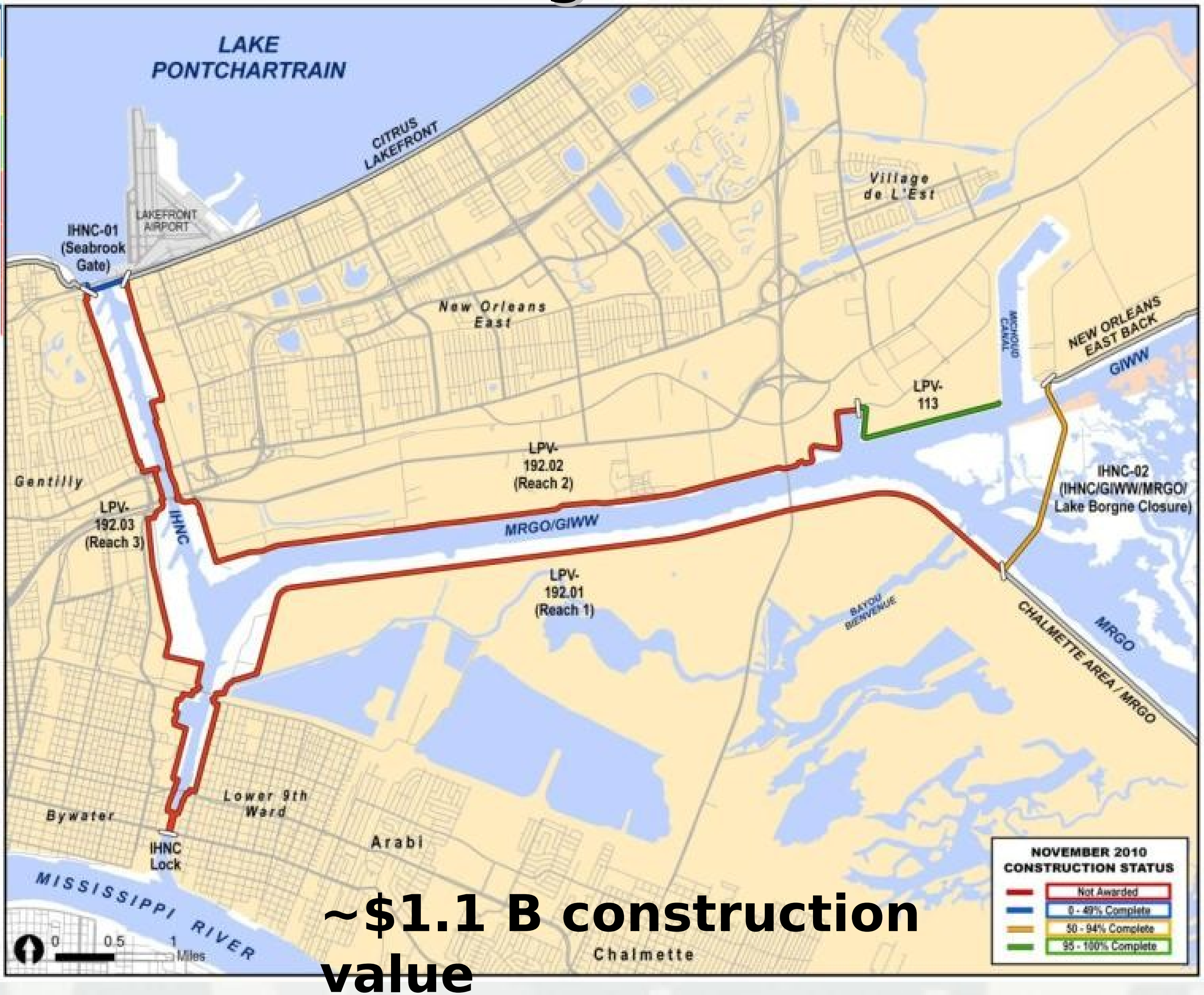
(2 miles constructed per month)

St. Bernard Floodwall

Surge Barrier Tie-in

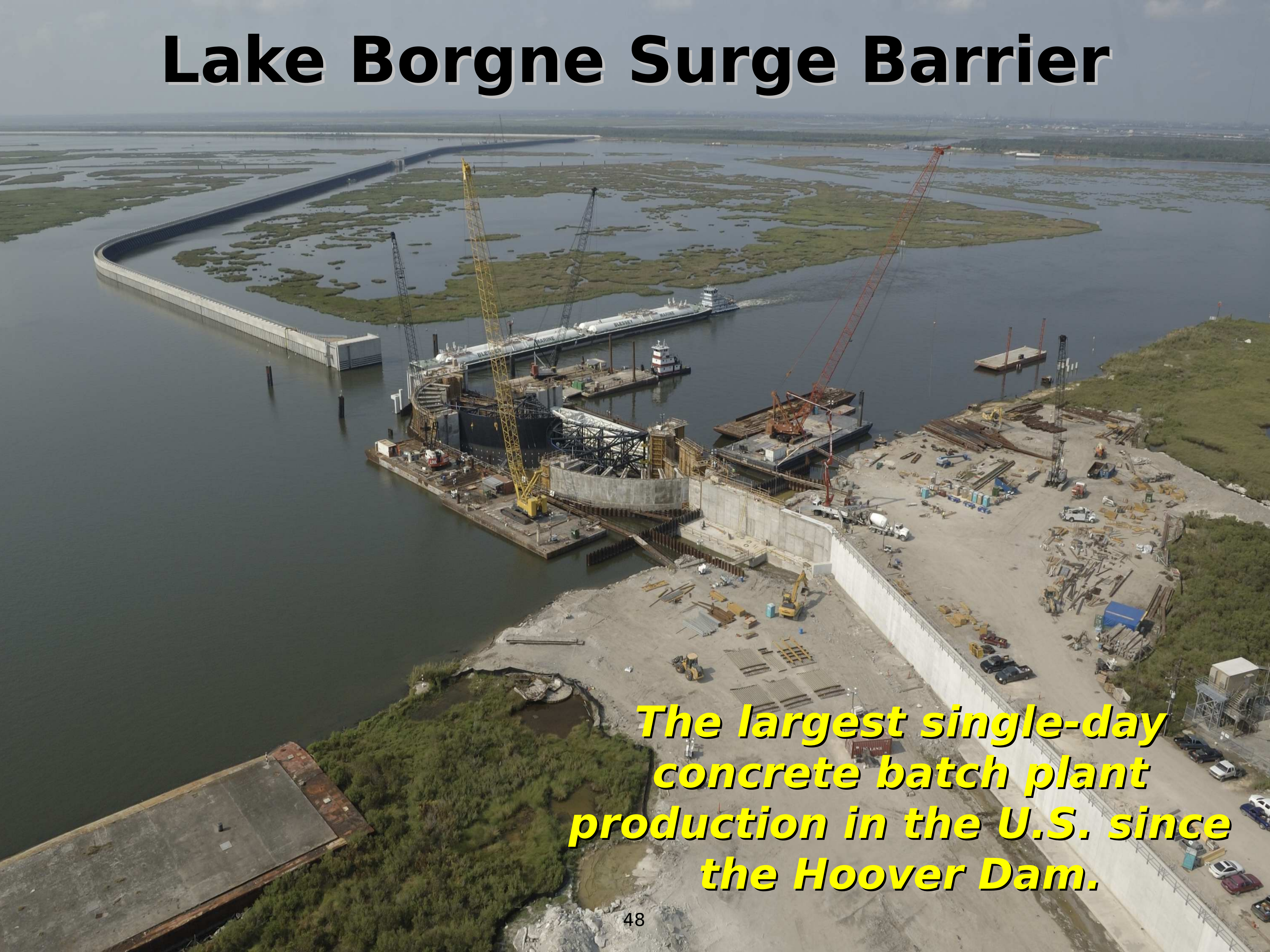


Inner Harbor Navigation Canal


LAKE PONTCHARTRAIN
CITRUS LAKEFRONT
LAKEFRONT AIRPORT
IHNC-01 (Seabrook Gate)
Village de L'Est
New Orleans East
MICHOUD CANAL
NEW ORLEANS EAST BACK
GIWW
LPV-113
LPV-192.02 (Reach 2)
IHNC-02 (IHNC/GIWW/MRGO/ Lake Borgne Closure)
Gentilly
LPV-192.03 (Reach 3)
IHNC
MRGO/GIWW
LPV-192.01 (Reach 1)
BAYOU BIENVENUE
MRGO
CHALMETTE AREA / MRGO
Lower 9th Ward
Bywater
Arabi
IHNC Lock
MISSISSIPPI RIVER
0 0.5 1 Miles
Chalmette
NOVEMBER 2010 CONSTRUCTION STATUS
Not Awarded
0 - 49% Complete
50 - 94% Complete
95 - 100% Complete

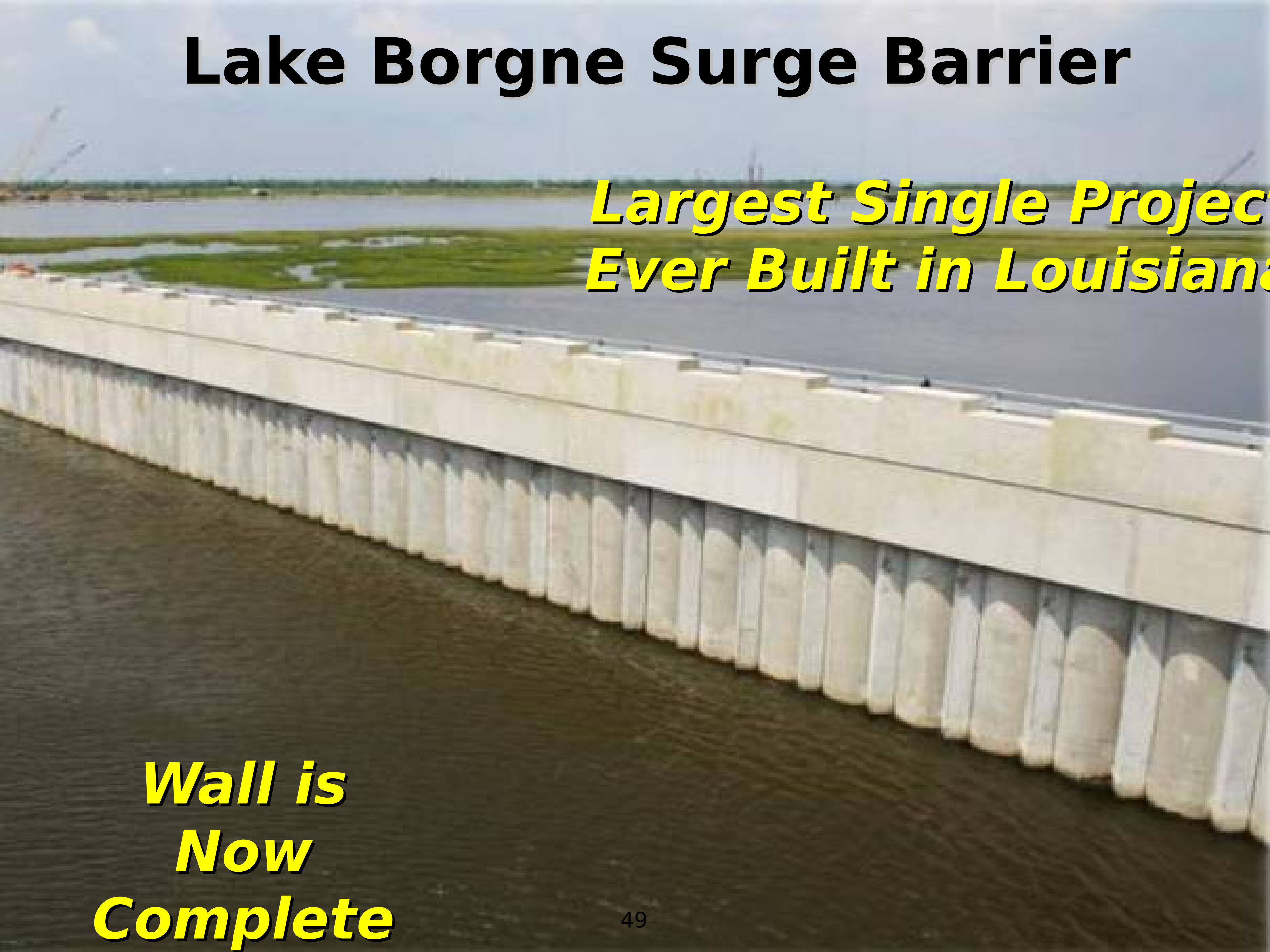
~$1.1 B construction value

Lake Borgne Surge Barrier



The largest single-day concrete batch plant production in the U.S. since the Hoover Dam.

Lake Borgne Surge Barrier



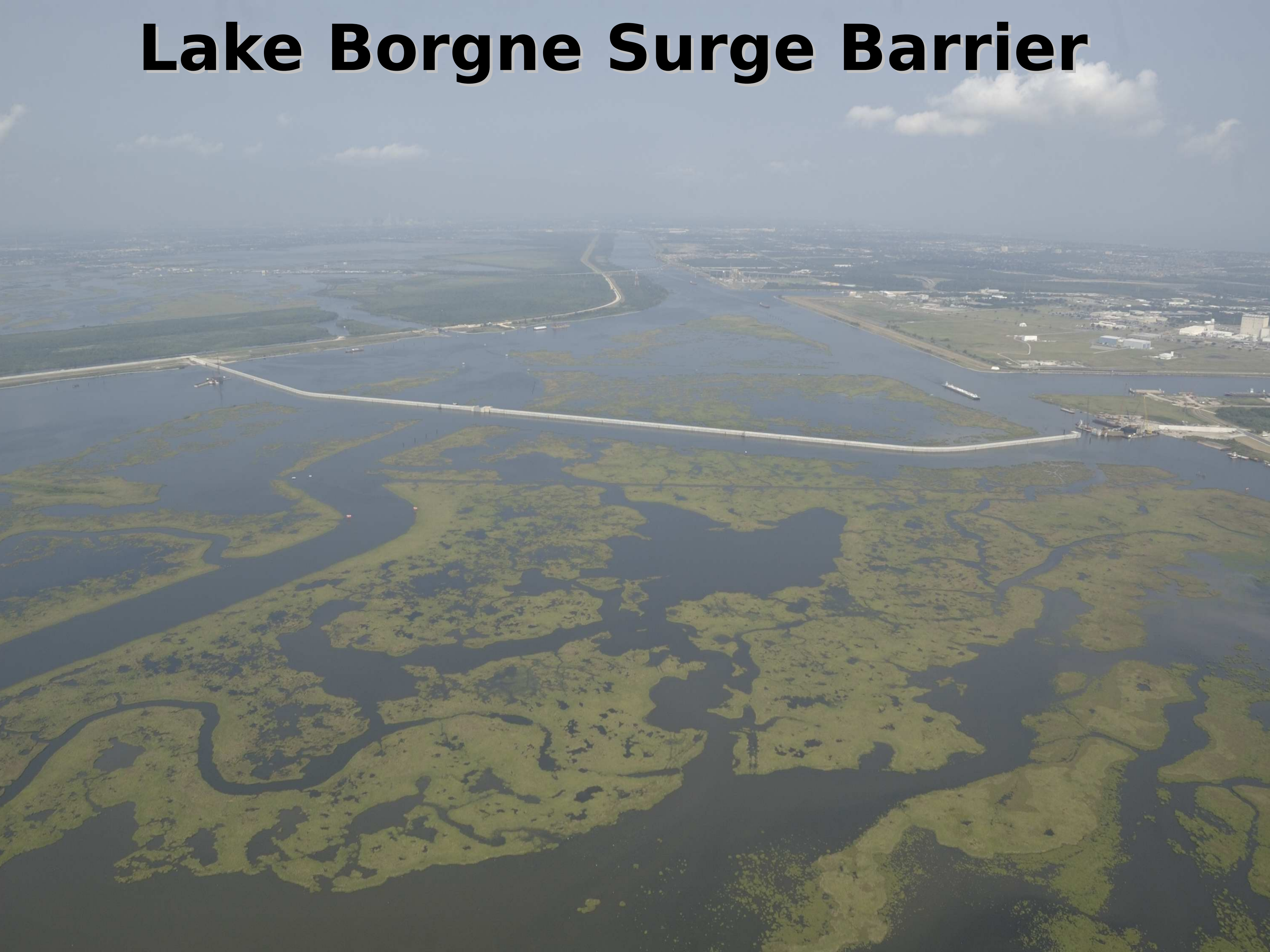
Largest Single Projec
Ever Built in Louisian

Wall is
Now
Complete

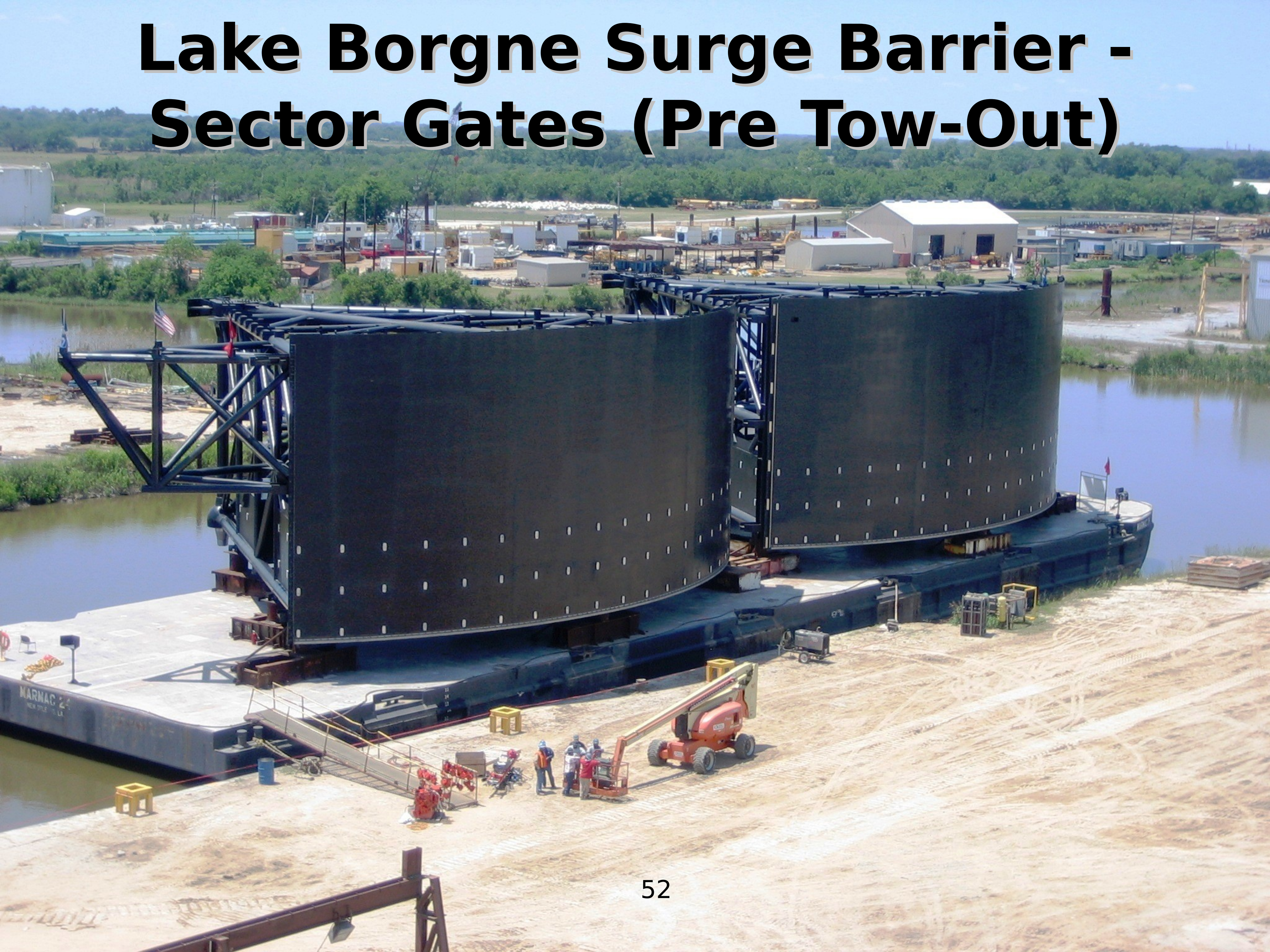
Lake Borgne Surge Barrier

Largest Design-Build Civil Works Project in the History of the Corps

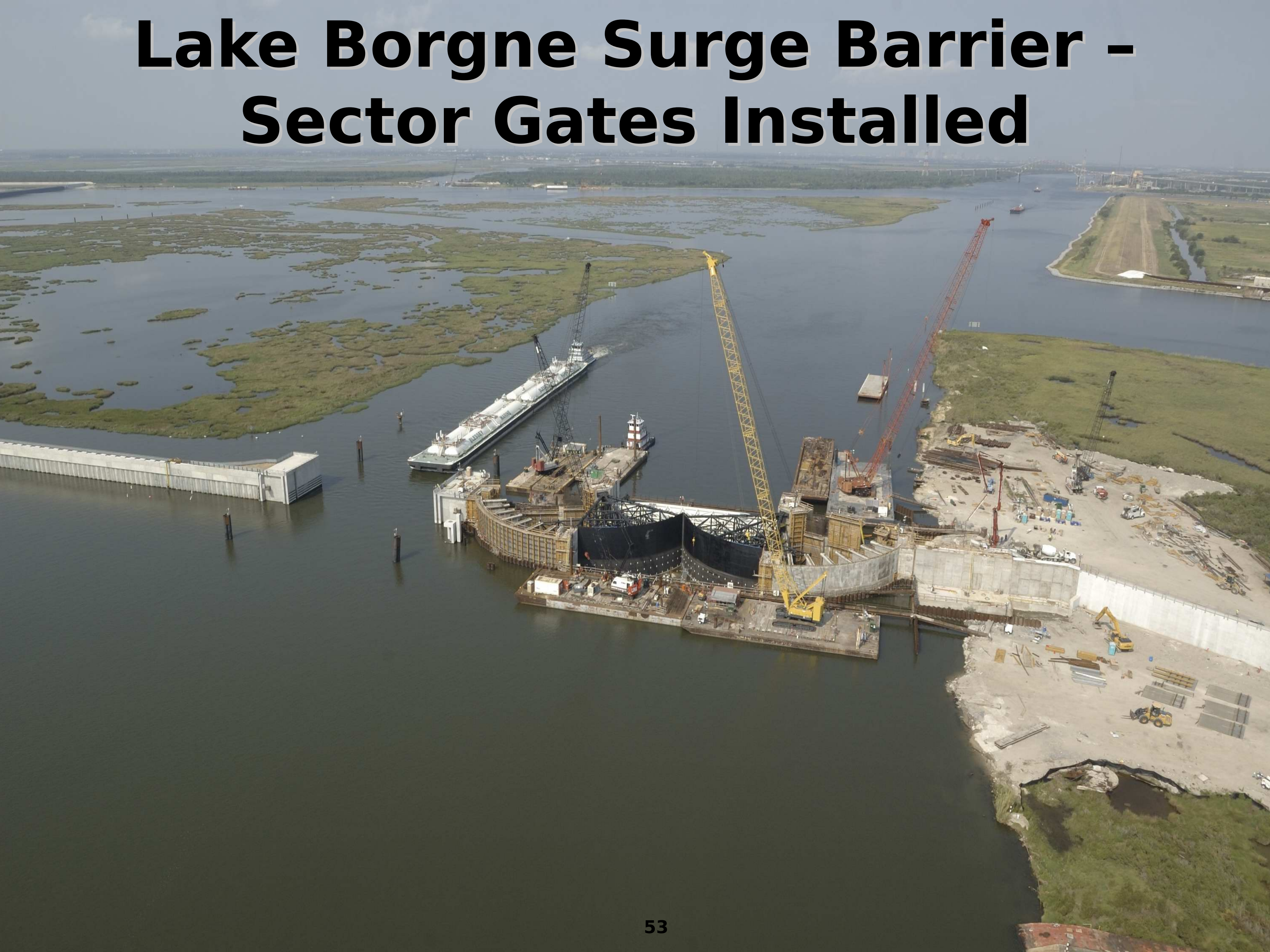
Lake Borgne Surge Barrier



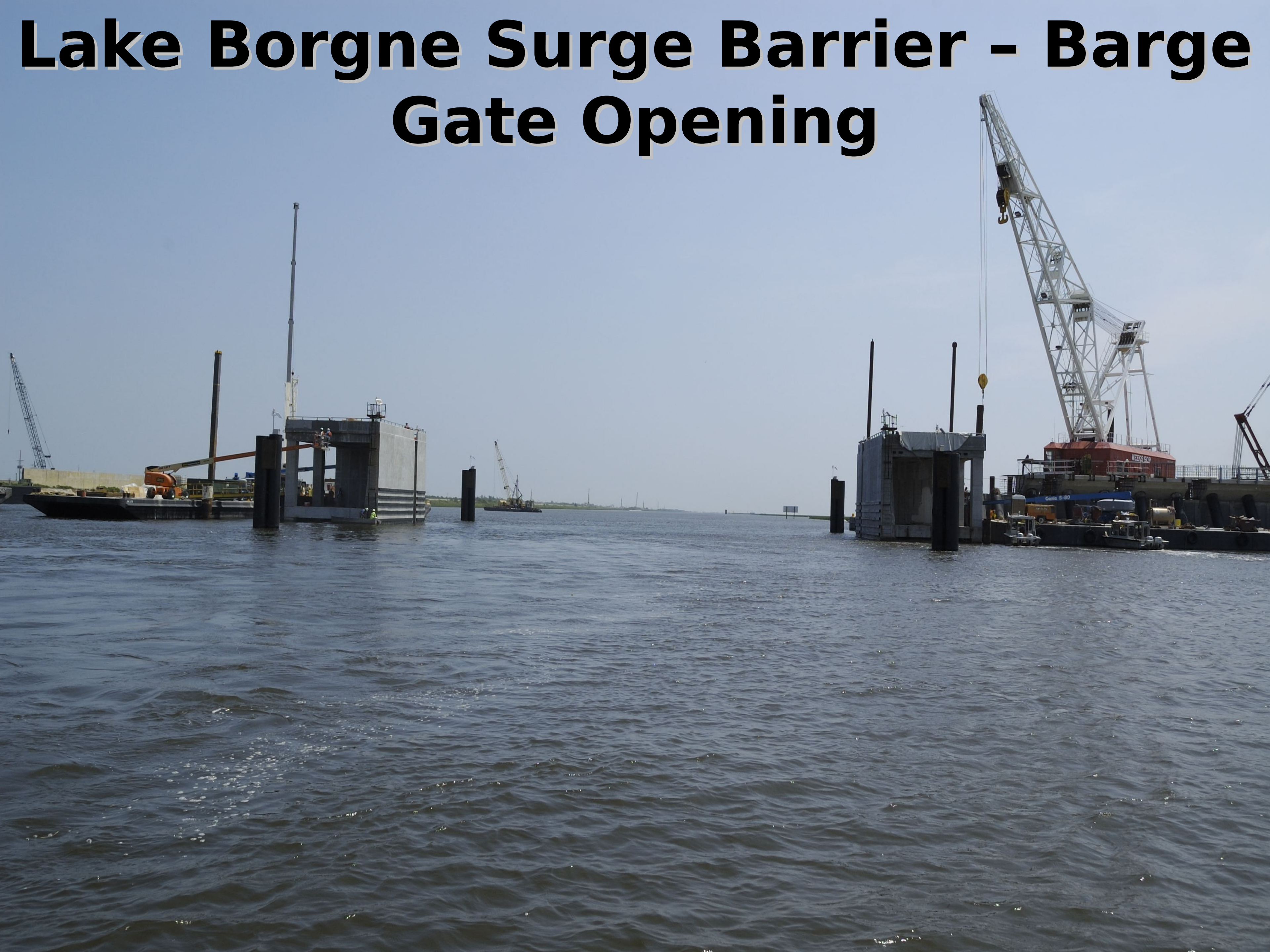
Lake Borgne Surge Barrier - Sector Gates (Pre Tow-Out)



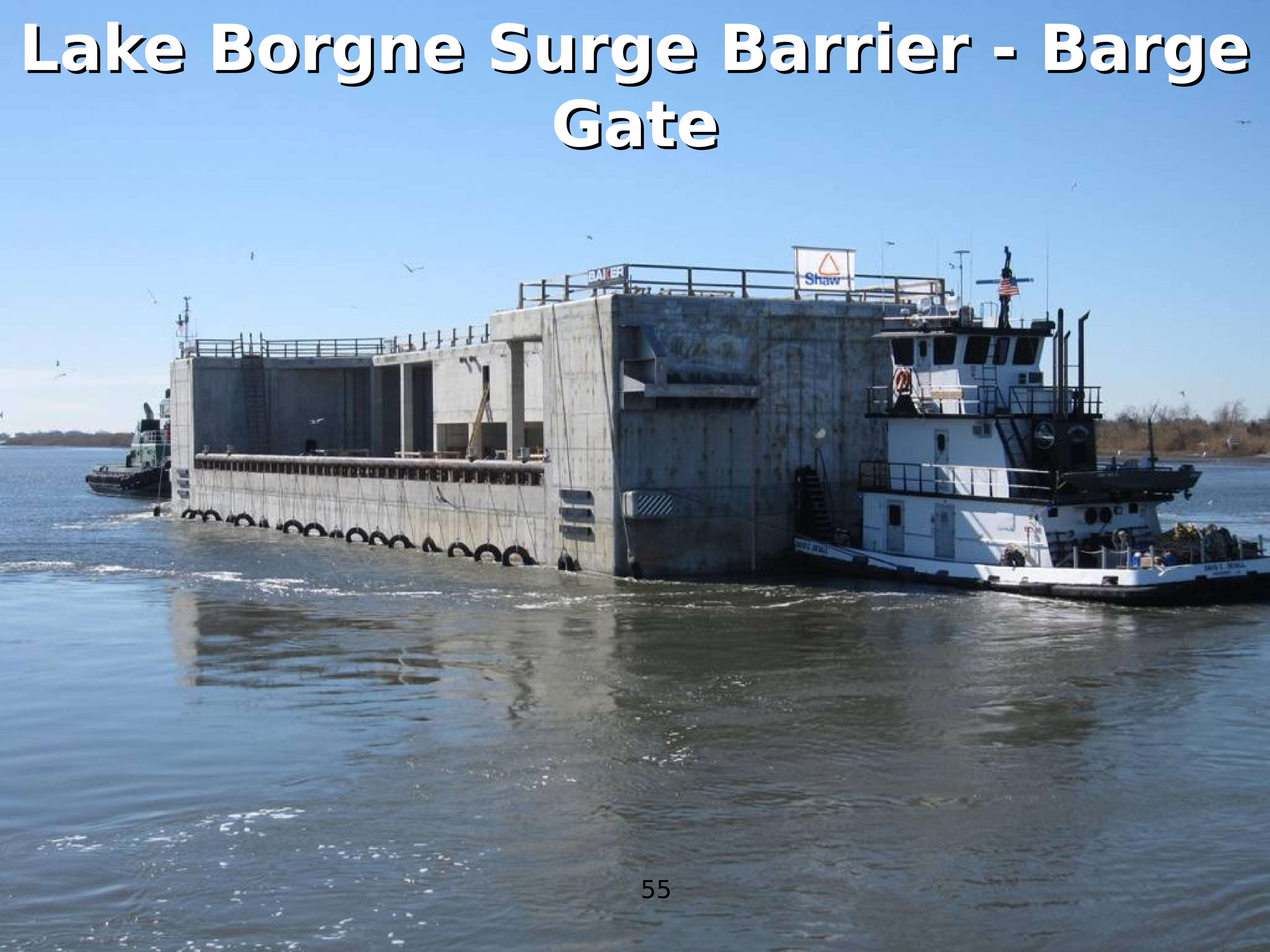
Lake Borgne Surge Barrier – Sector Gates Installed



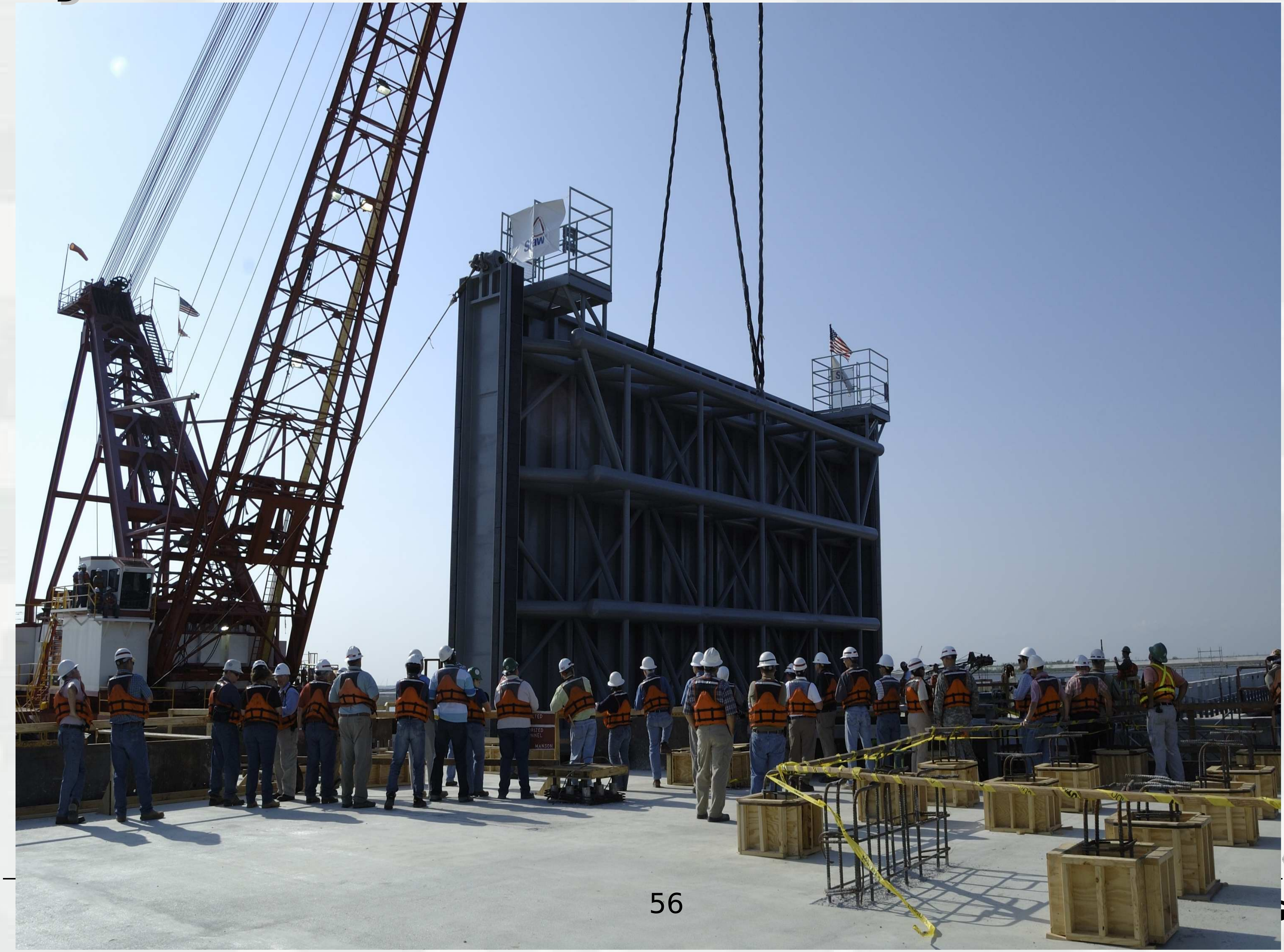
Lake Borgne Surge Barrier – Barge Gate Opening



Lake Borgne Surge Barrier - Barge Gate

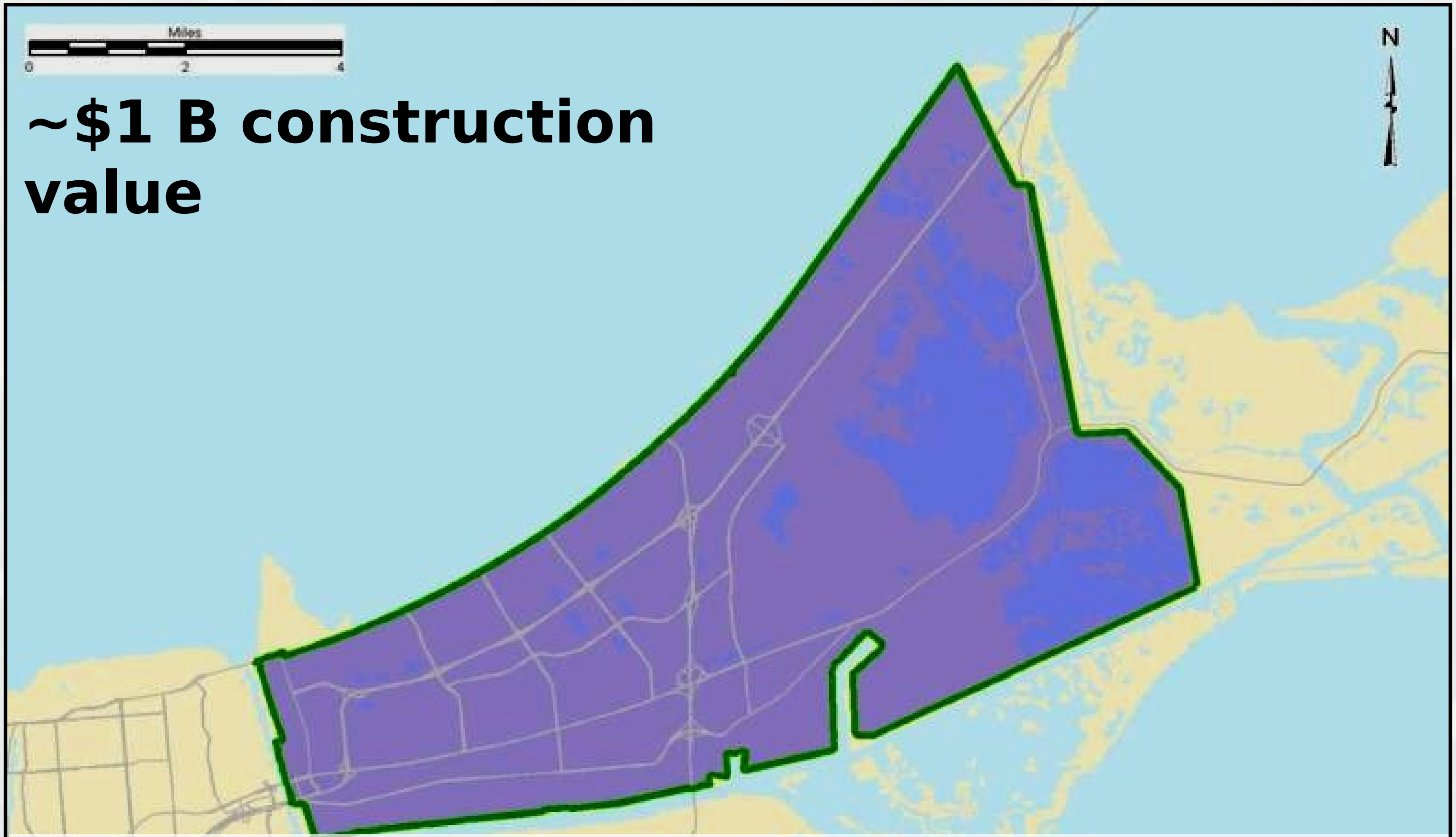


Bayou Bienvenue Gate Installation



Bayou Bienvenue Gate

New Orleans East



~$1 B construction value

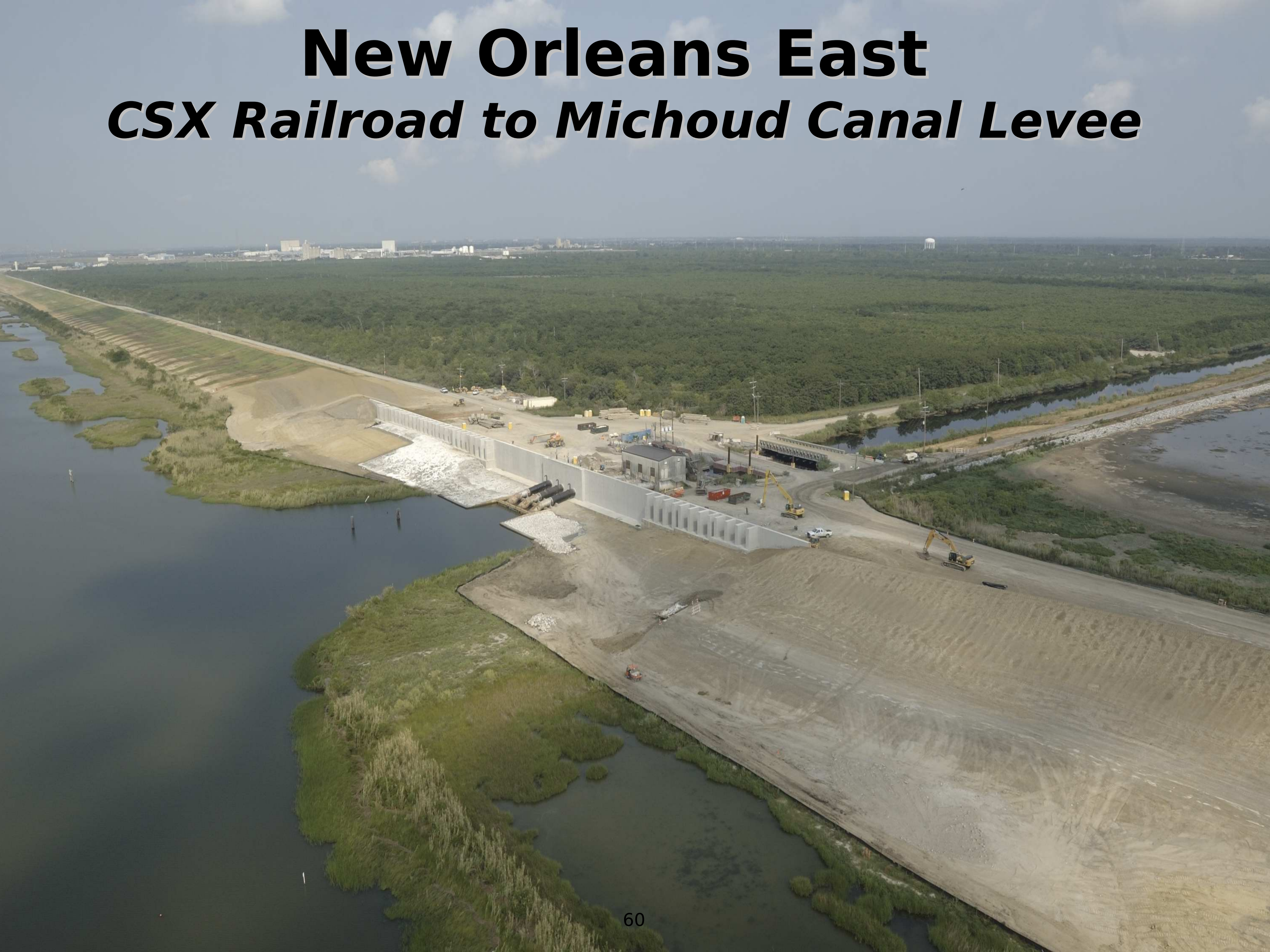
Raise approximately **25 miles** of levee and construct approximately **2 miles** of floodwall from Lakefront Airport to Michoud Canal. Relocate I-10 (ramp) and Highways 11 and 90 (replace existing gates).

New Orleans East

Largest Deep Soil Mixing Project in the World

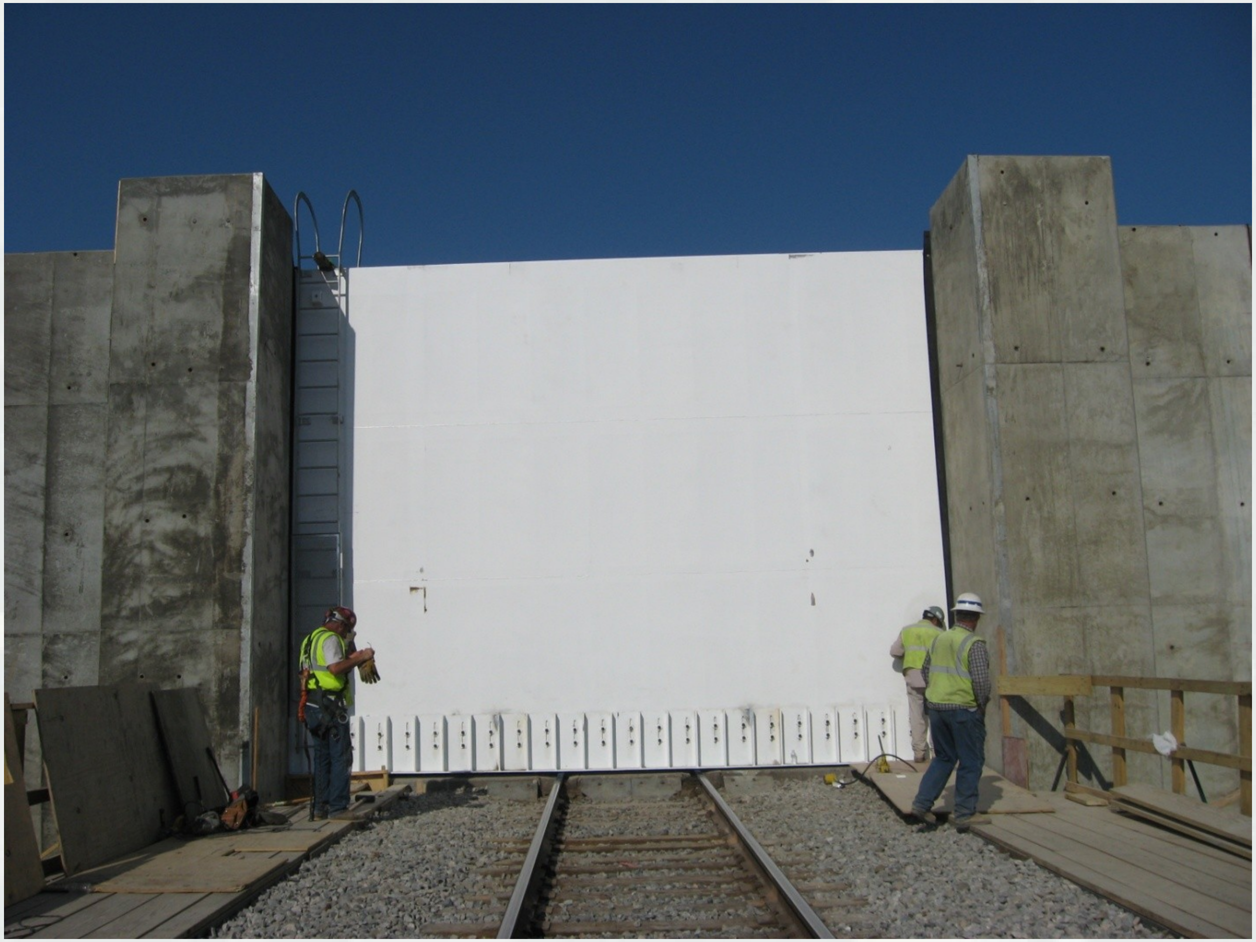
New Orleans East

CSX Railroad to Michoud Canal Levee



New Orleans East

Railroad Gate



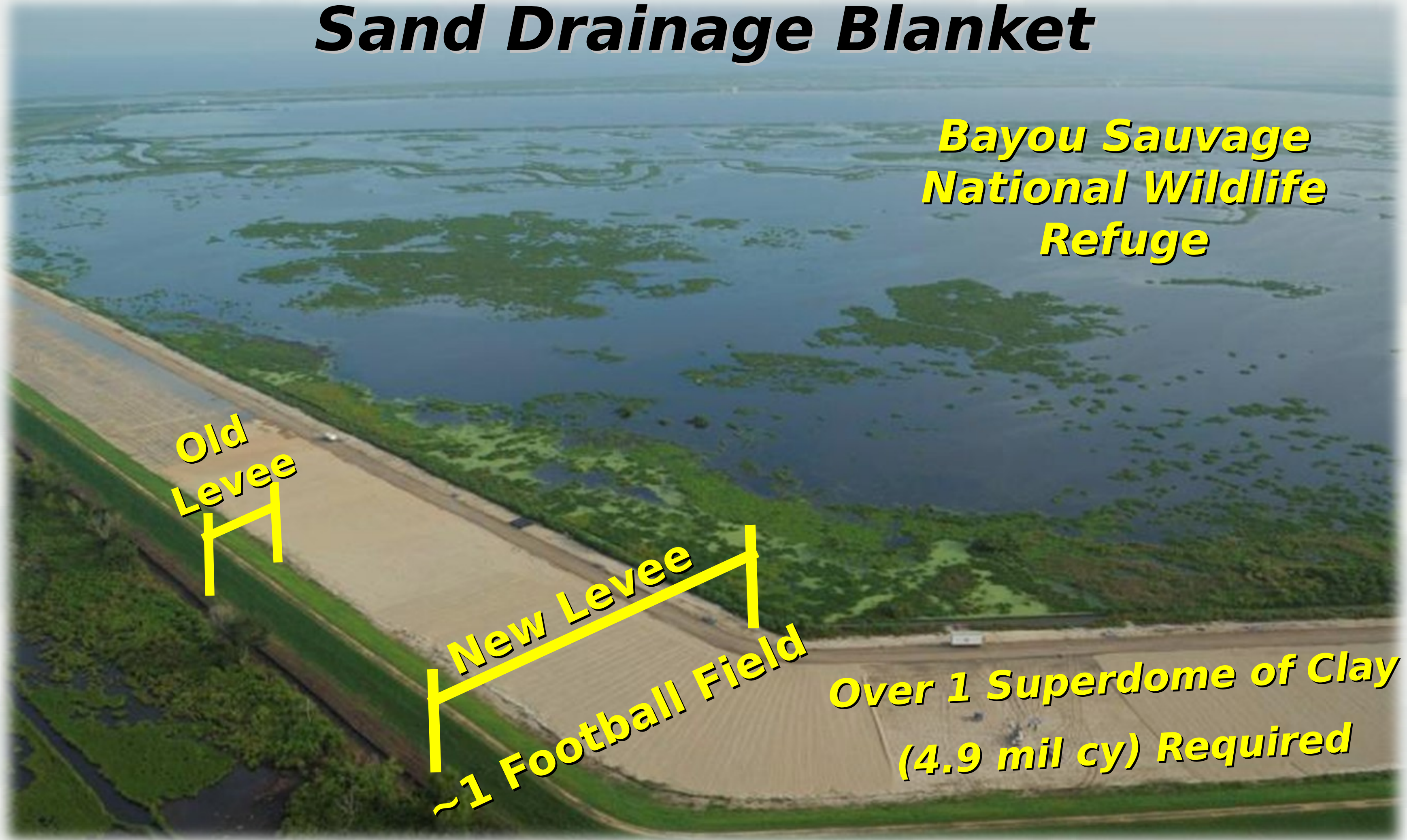
Southpoint to CSX Railroad Levee

Wick Drain Installation

Largest Wick Drain Project in U.S. History

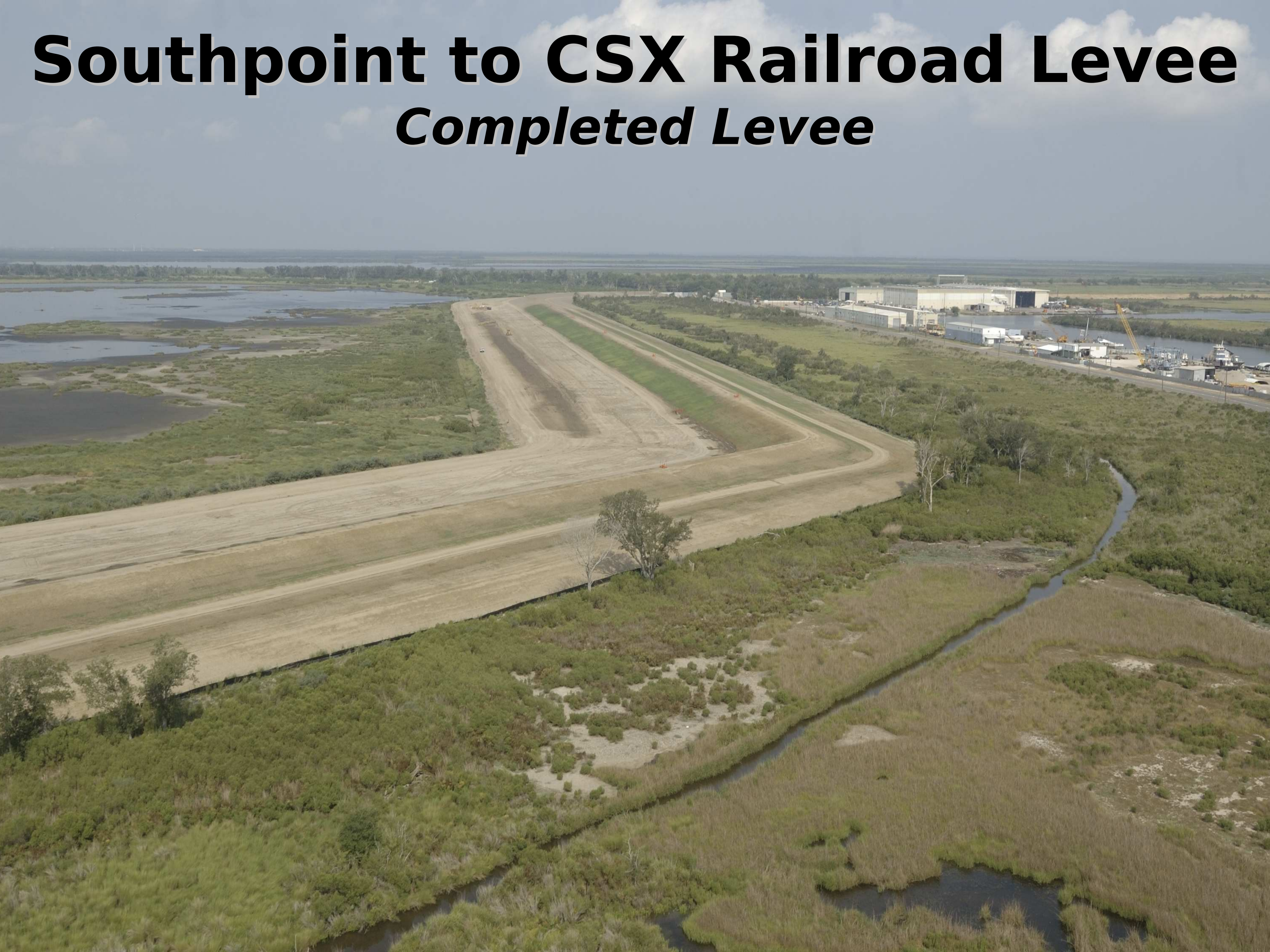
Southpoint to CSX Railroad Levee

Sand Drainage Blanket


Bayou Sauvage National Wildlife Refuge
Old Levee
New Levee
~1 Football Field
Over 1 Superdome of Clay
(4.9 mil cy) Required

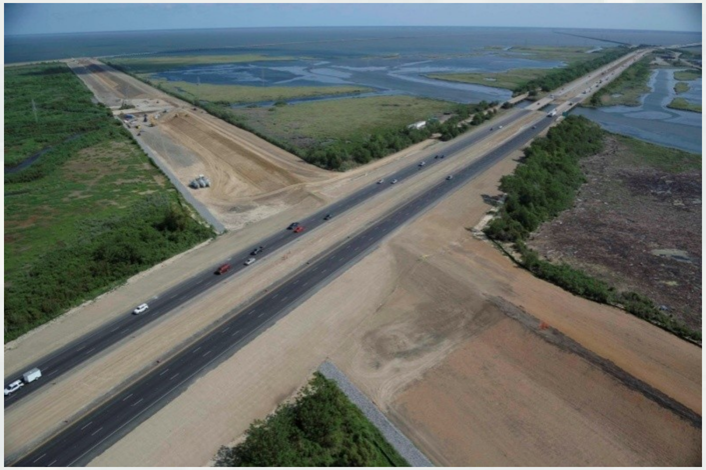
Southpoint to CSX Railroad Levee

Completed Levee

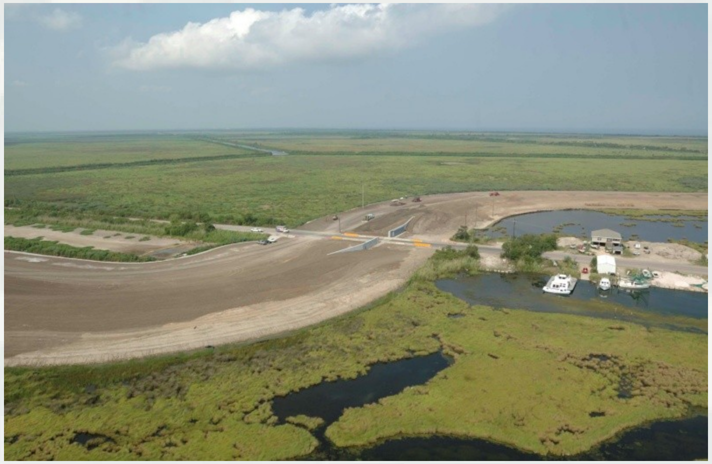


New Orleans East

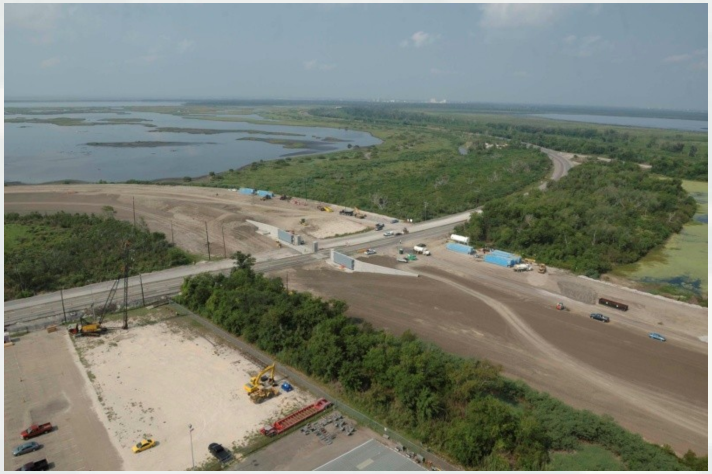
Road Crossings



Interstate 10



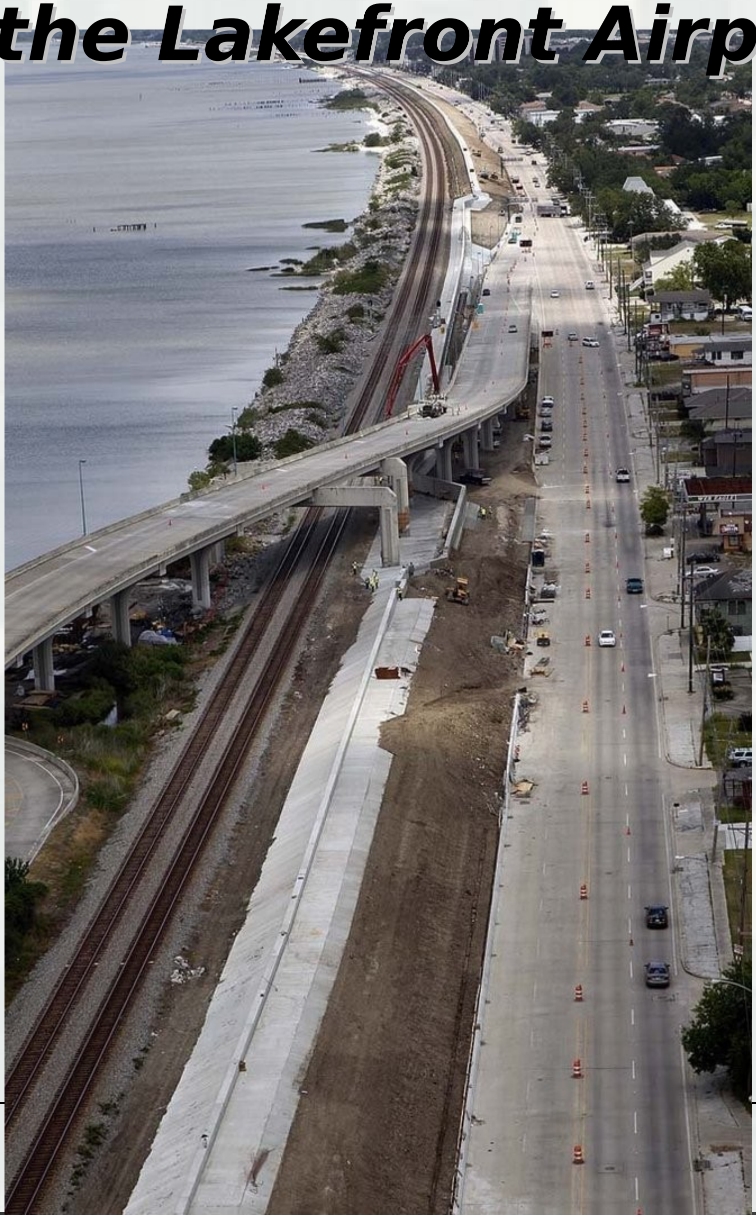
Highway 11



Highway 90

New Orleans East Floodwall Construction

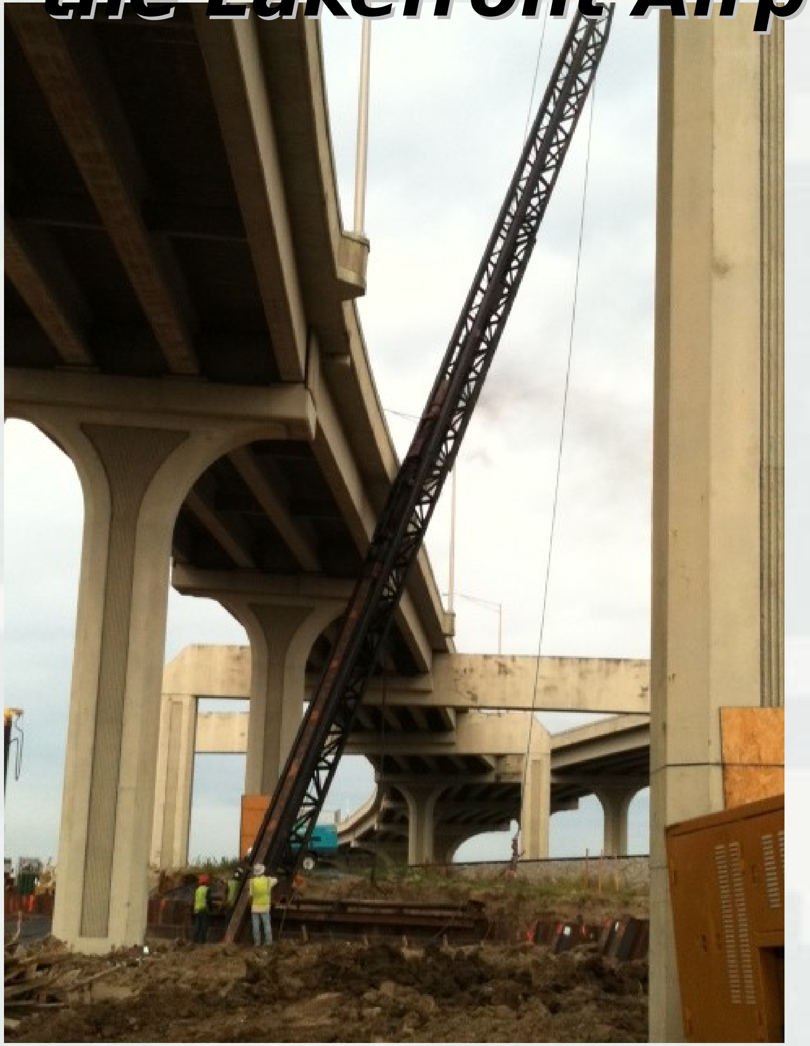
Near the Lakefront Airport



Courtesy of The Times-

New Orleans East Floodwall Construction

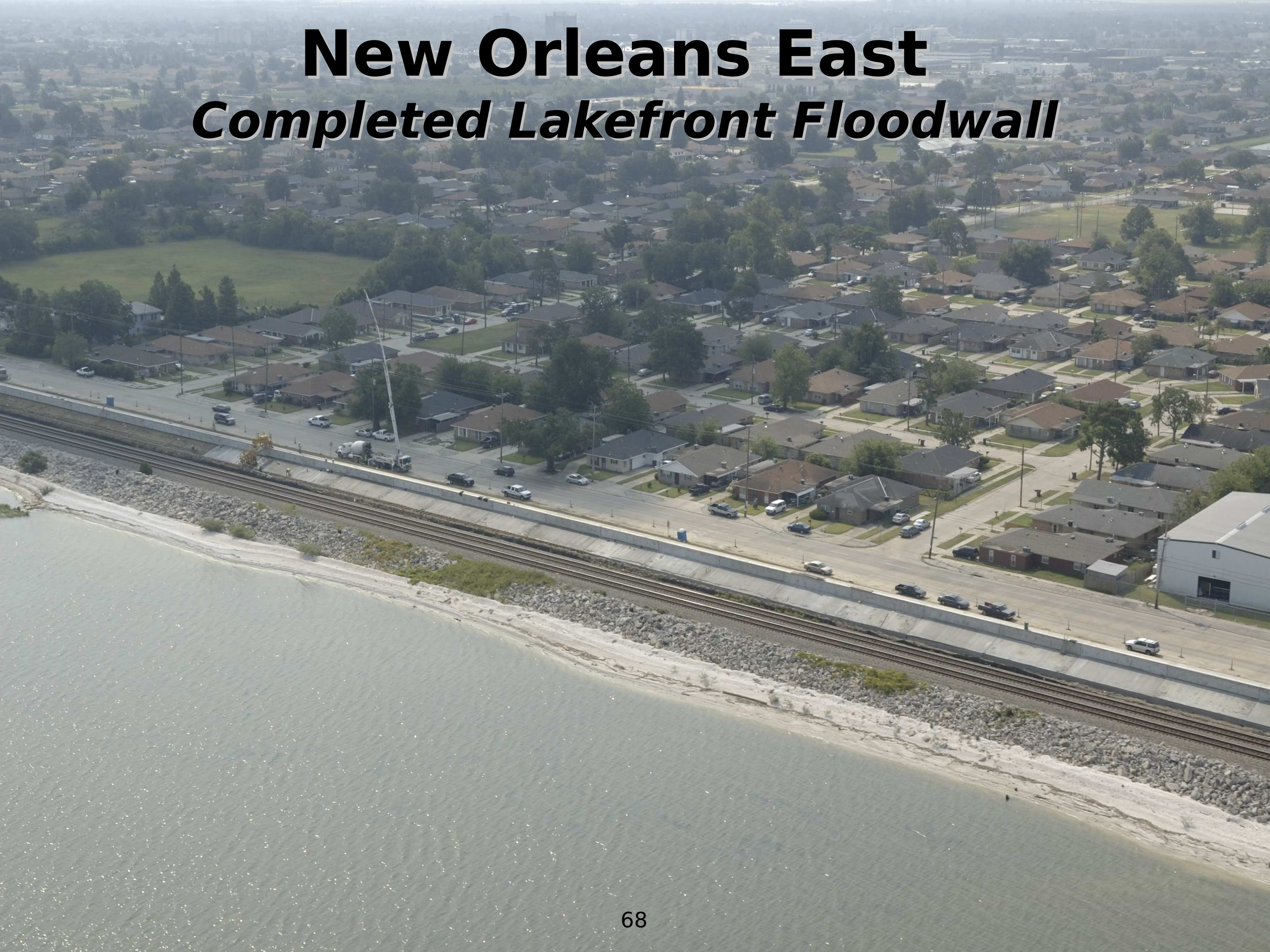
Near the Lakefront Airport



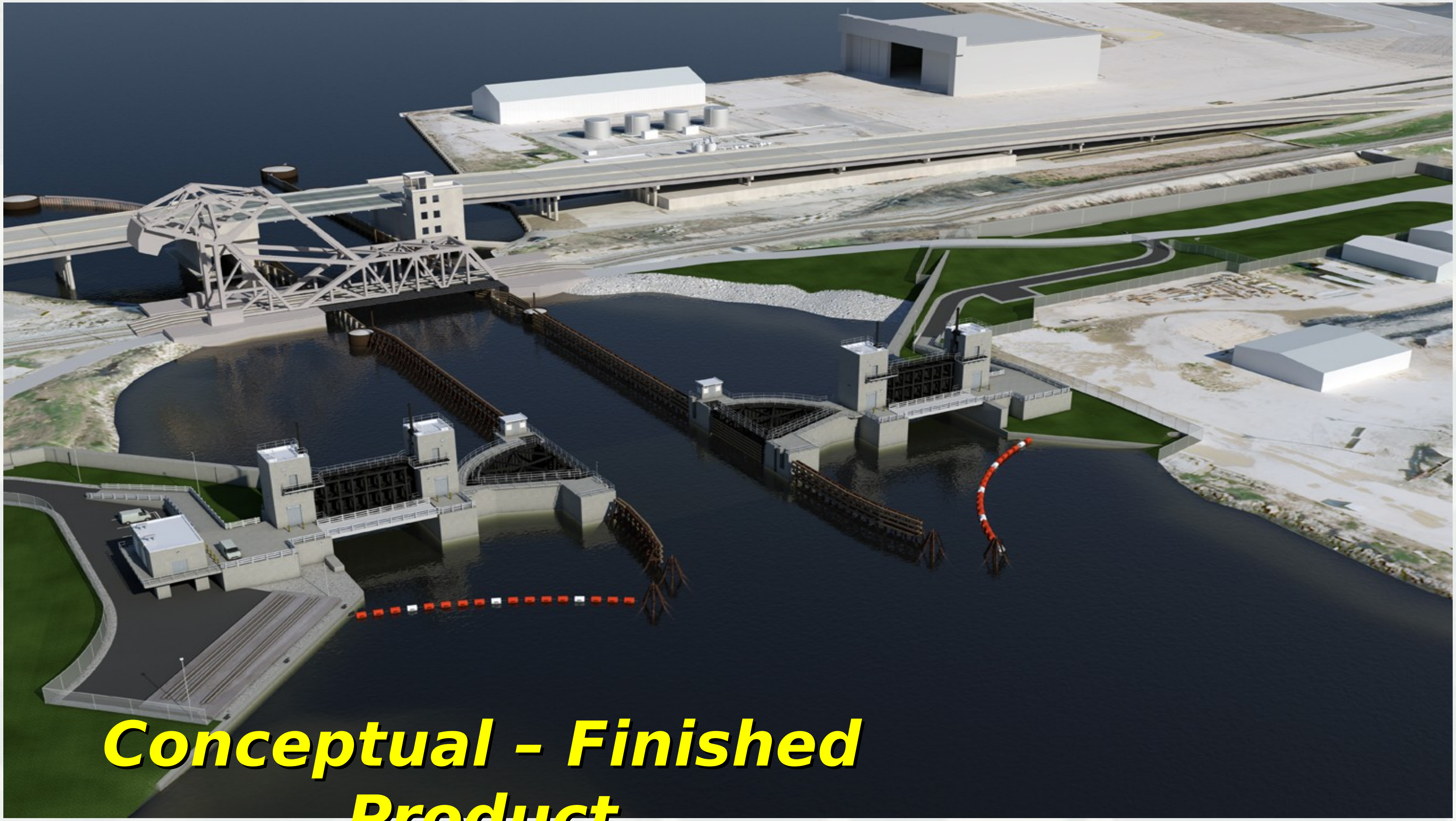
BUILDING STRONG®

New Orleans East

Completed Lakefront Floodwall

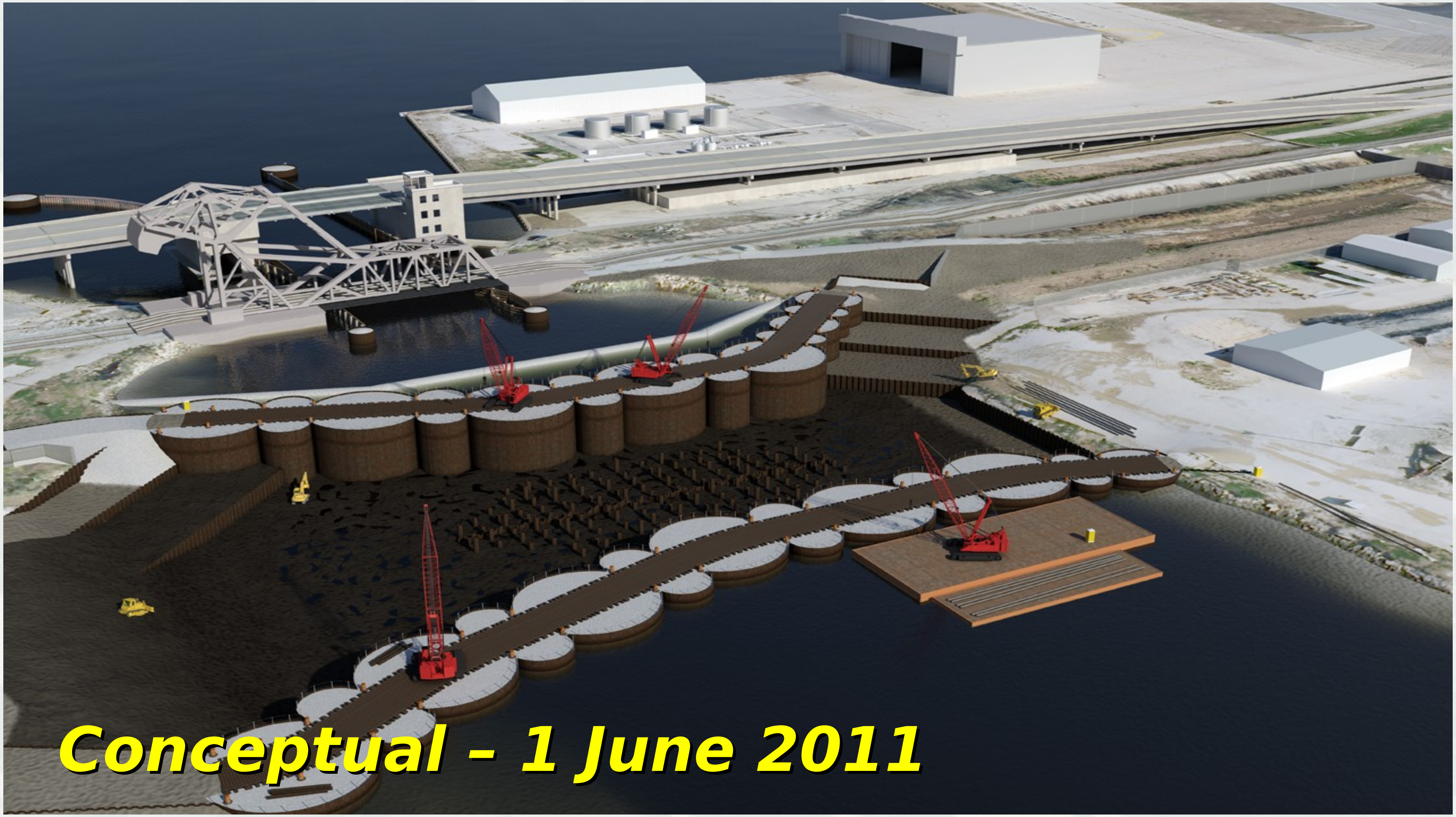


Seabrook Floodgate Complex



Conceptual – Finished Product

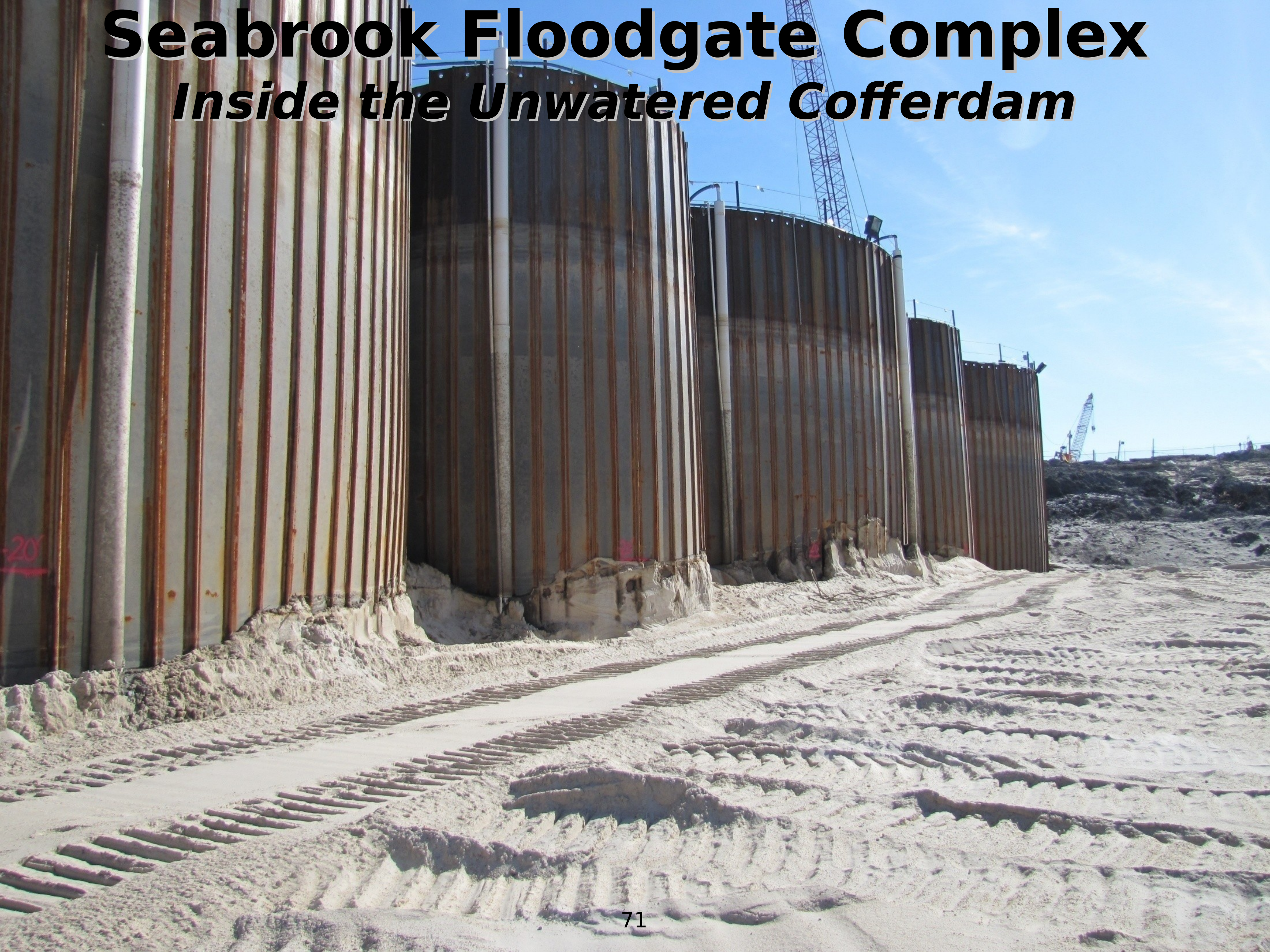
Seabrook Floodgate Complex



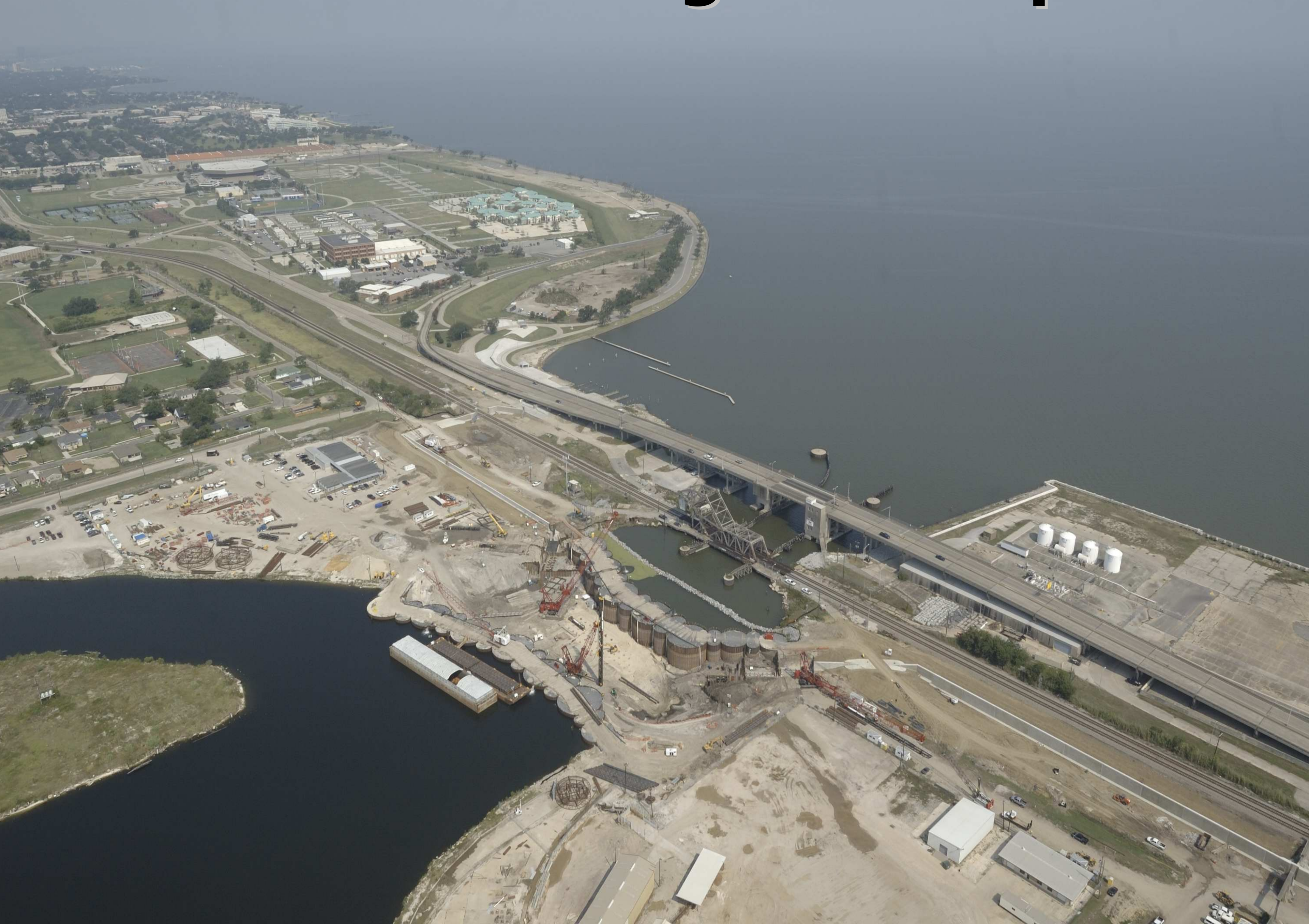
Conceptual – 1 June 2011

Seabrook Floodgate Complex

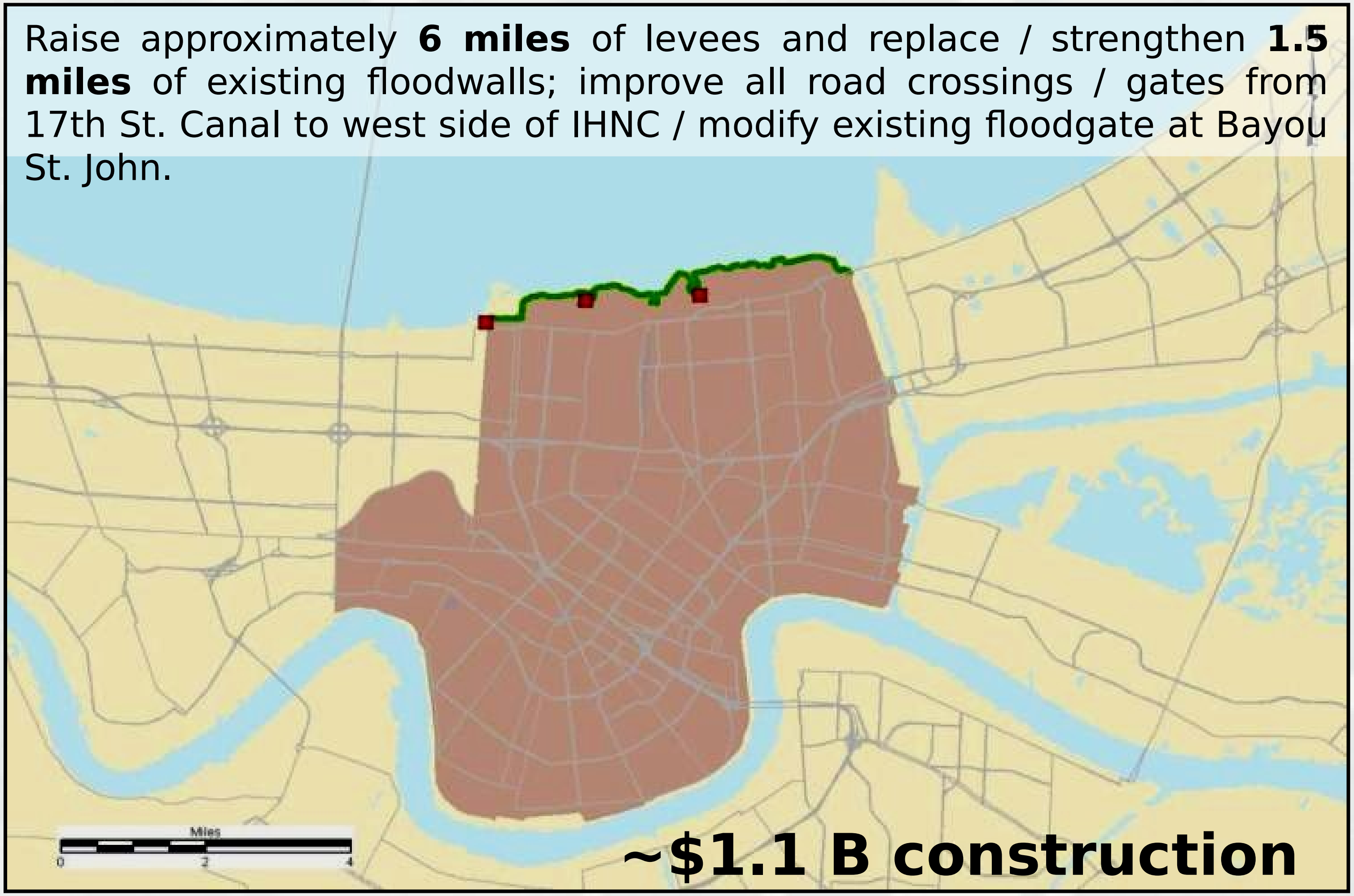
Inside the Unwatered Cofferdam



Seabrook Floodgate Complex



Orleans Metro



Raise approximately **6 miles** of levees and replace / strengthen **1.5 miles** of existing floodwalls; improve all road crossings / gates from 17th St. Canal to west side of IHNC / modify existing floodgate at Bayou St. John.

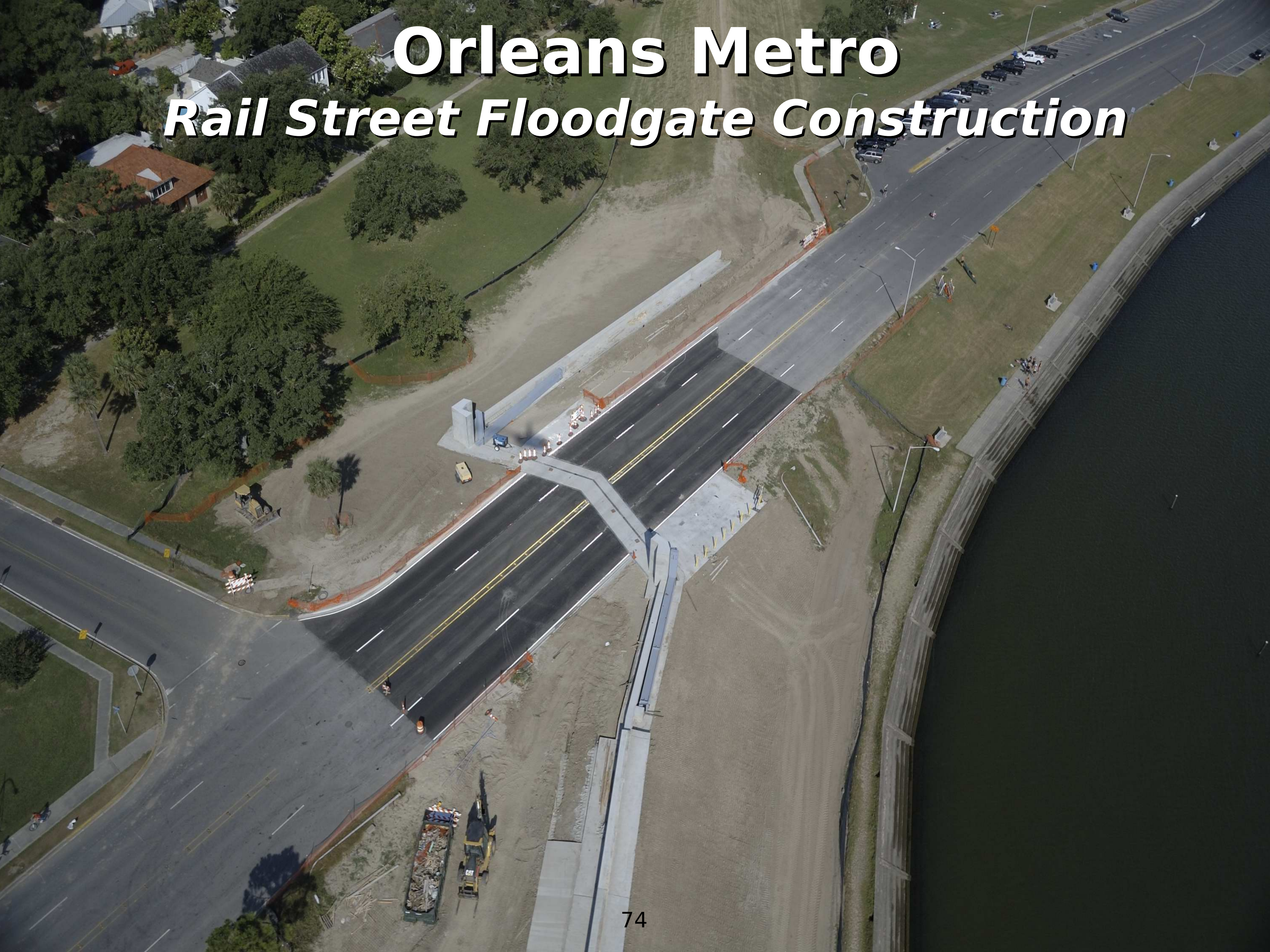
~$1.1 B construction value

Phase 1 Construction - *100% complete*

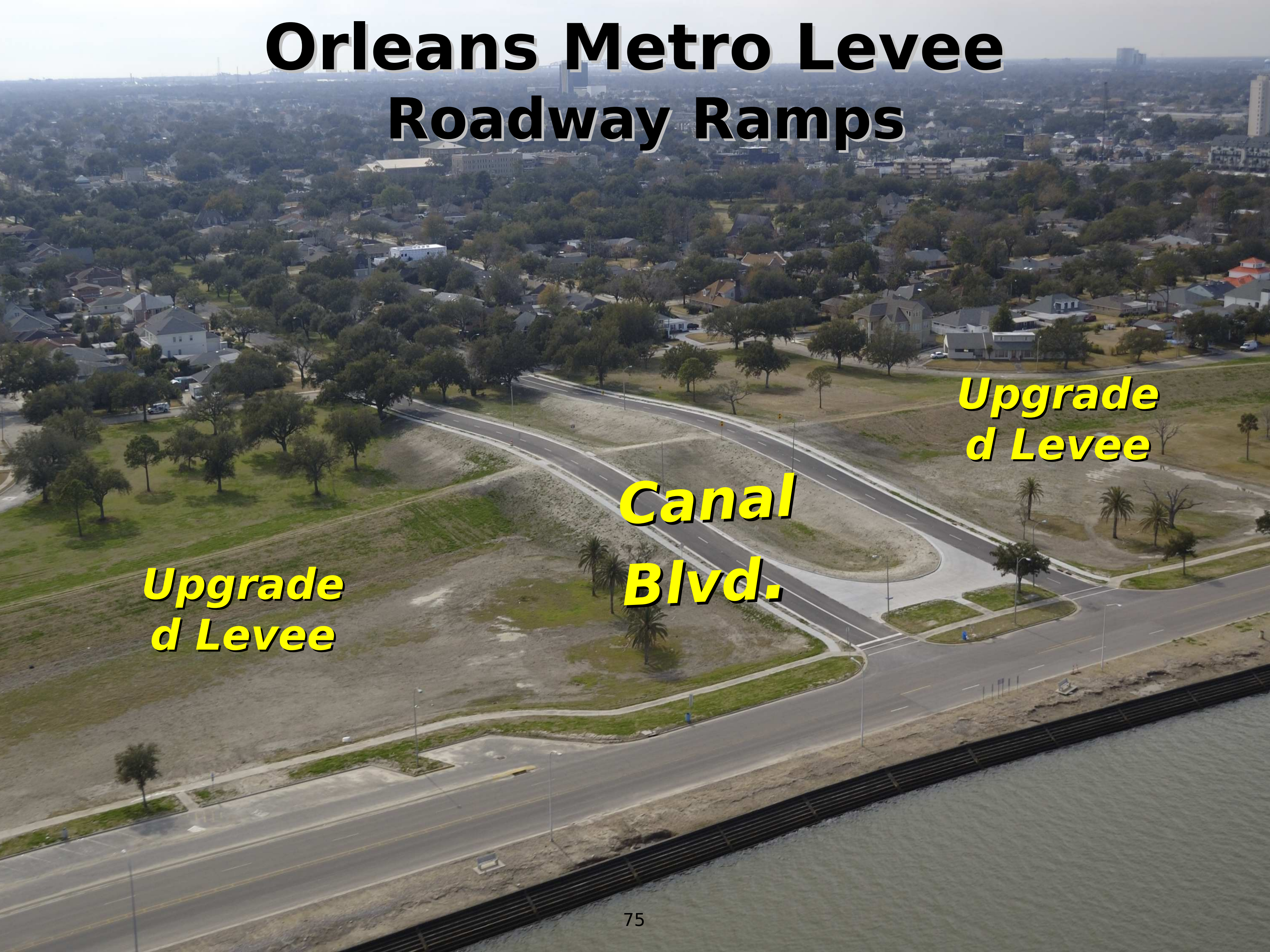
100-year level of risk reduction - More than *90% complete*

Orleans Metro

Rail Street Floodgate Construction

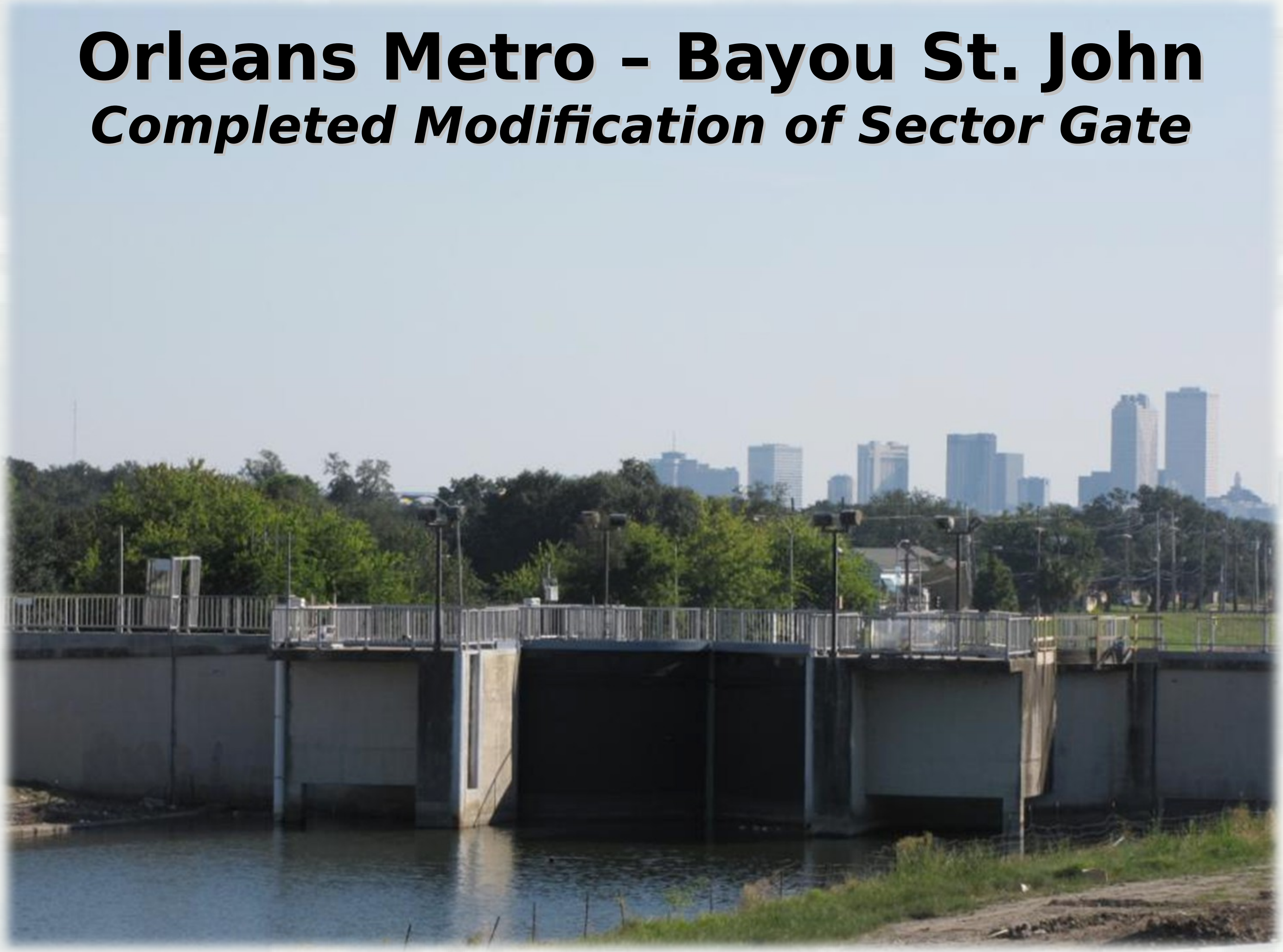


Orleans Metro Levee
Roadway Ramps


Upgrade d Levee
Canal Blvd.
Upgrade d Levee

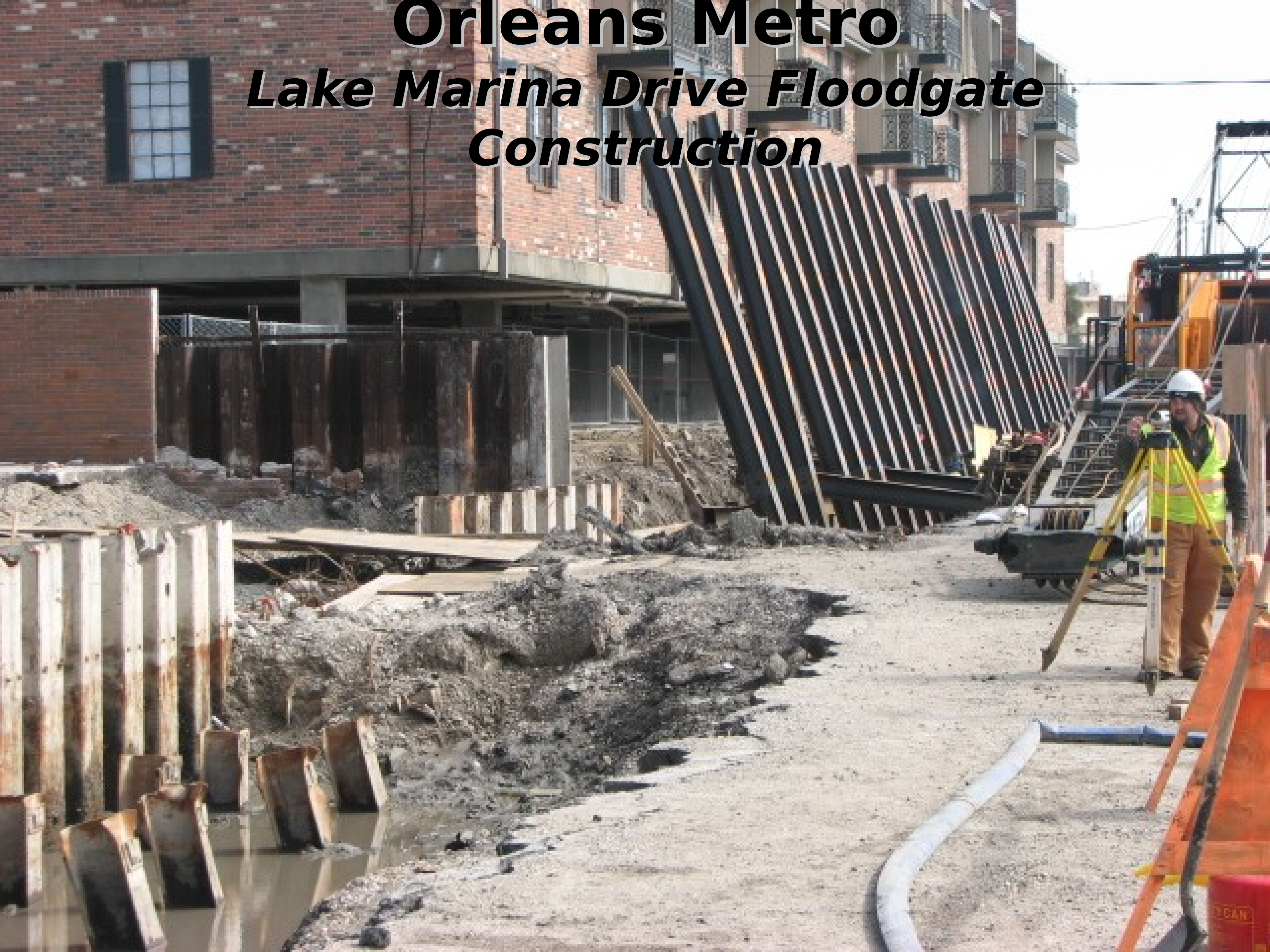
Orleans Metro – Bayou St. John

Completed Modification of Sector Gate



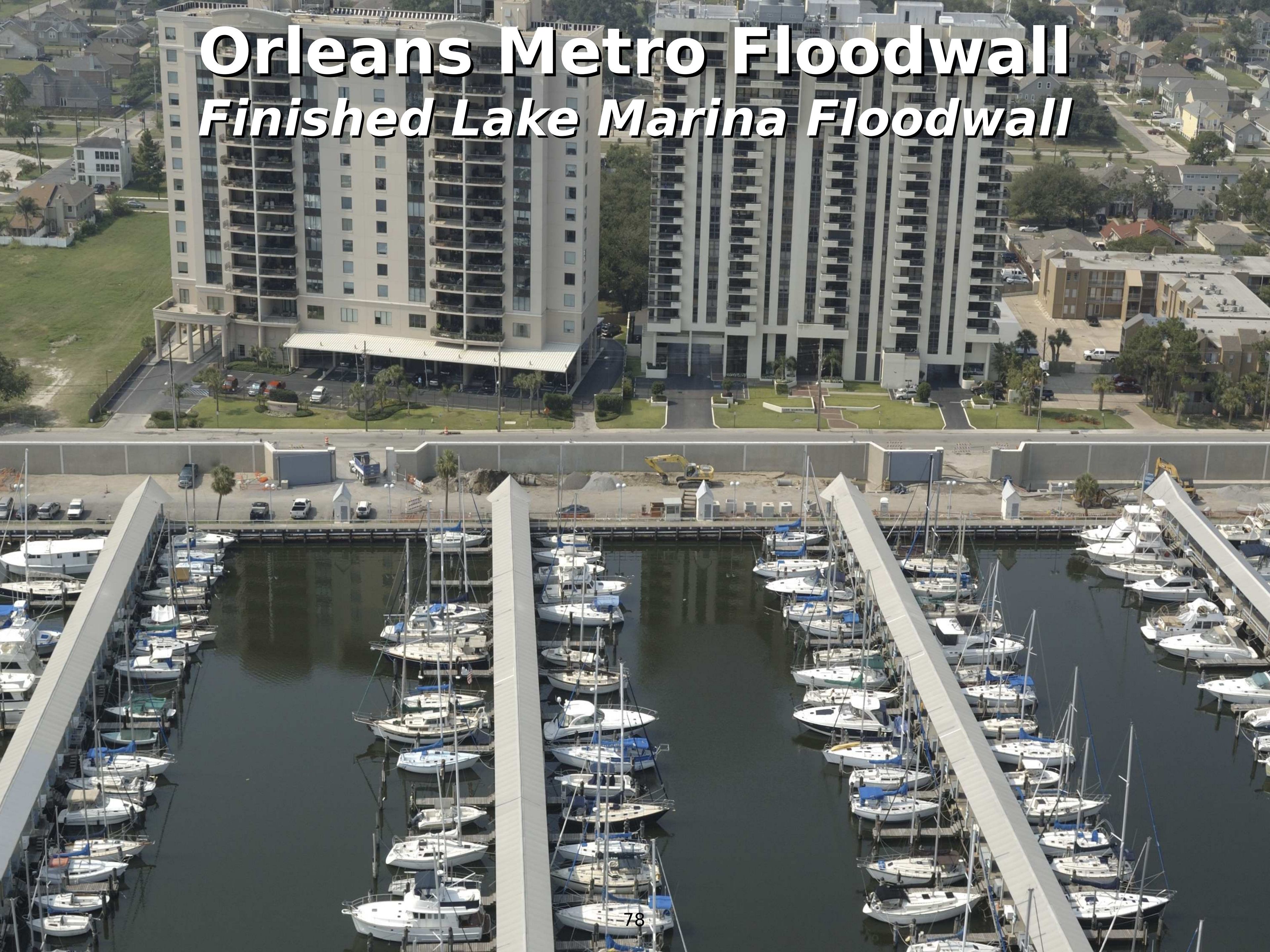
Orleans Metro

Lake Marina Drive Floodgate Construction



Orleans Metro Floodwall

Finished Lake Marina Floodwall



Orleans Parish 2011 Interim Closure Structures

Seabrook (IHNC)

Completed March 2011

London Ave. Canal

Completed June 2006

17th St. Canal

Completed June 2006

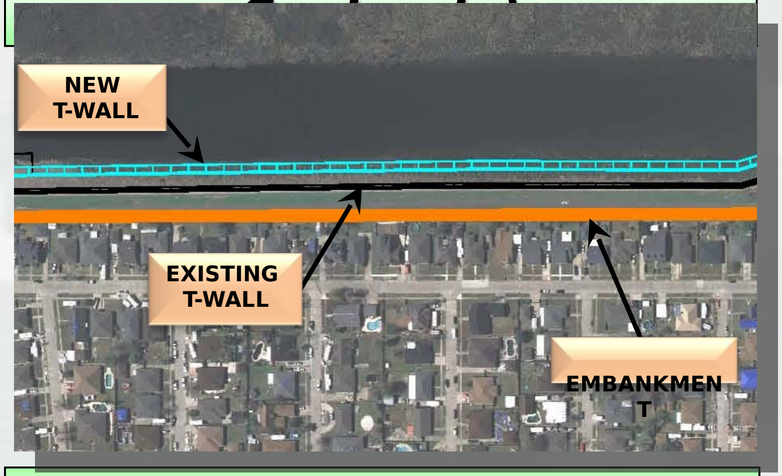
Orleans Ave. Canal

Completed June 2006

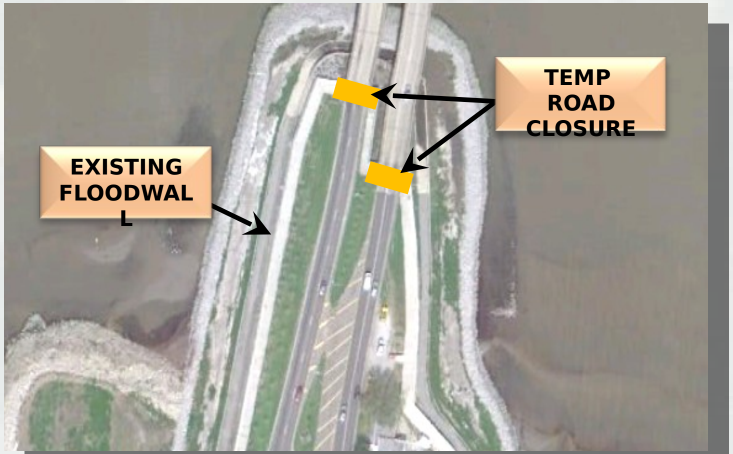
Provides interim 100-year level of risk reduction

East Jefferson
2011 Engineered Interim Structures

West Return Wall (3


NEW T-WALL
EXISTING T-WALL
EMBANKMENT

Causeway


TEMP ROAD CLOSURE
EXISTING FLOODWALL

Elmwood Pump Station

Suburban Pump Station

Provides interim 100-year level of risk reduction
Tested by Hurricanes Katrina, Rita, Gustav and Ike

The HSDRRS is designed to defend against a 100-year storm surge.

?

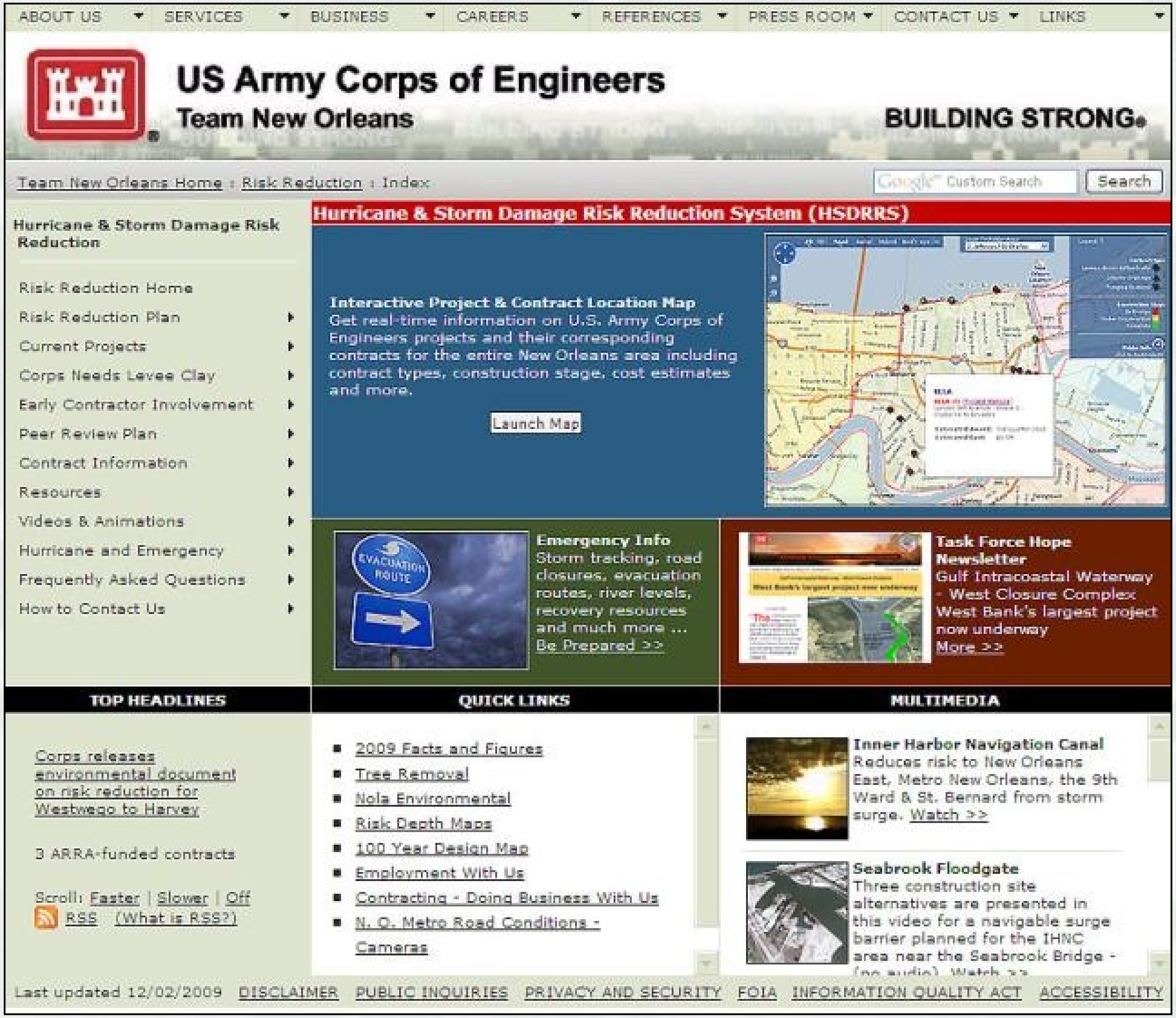
CIMSS
Image Index
1: 2005AUG23/21:15:00UTC
2: 2005AUG26/06:15:00UTC
3: 2005AUG28/07:15:00UTC
4: 2005AUG29/14:45:00UTC
TROPICAL DEPR
TROPICAL STORM
CATEGORY 1
CATEGORY 2
CATEGORY 3
CATEGORY 4
CATEGORY 5
1
2
3
4
1
MONTAGE OF KATRINA
GOES-12/INFRARED
UW-CIMSS
NOAA

?

Mother Nature can always produce a much bigger storm!

Web-based Resources

http://www.mvn.usace.army.mil/hps


ABOUT US
SERVICES
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Hurricane & Storm Damage Risk Reduction

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- Peer Review Plan
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Hurricane & Storm Damage Risk Reduction System (HSDRRS)

Interactive Project & Contract Location Map
Get real-time information on U.S. Army Corps of Engineers projects and their corresponding contracts for the entire New Orleans area including contract types, construction stage, cost estimates and more.

Emergency Info
Storm tracking, road closures, evacuation routes, river levels, recovery resources and much more ...
Be Prepared >>

Task Force Hope Newsletter
Gulf Intracoastal Waterway - West Closure Complex
West Bank's largest project now underway
More >>

TOP HEADLINES

Corps releases environmental document on risk reduction for Westwego to Harvey

3 ARRA-funded contracts

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QUICK LINKS

- 2009 Facts and Figures
- Tree Removal
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- Risk Depth Maps
- 100 Year Design Map
- Employment With Us
- Contracting - Doing Business With Us
- N. O. Metro Road Conditions - Cameras

MULTIMEDIA

Inner Harbor Navigation Canal
Reduces risk to New Orleans East, Metro New Orleans, the 9th Ward & St. Bernard from storm surge. Watch >>

Seabrook Floodgate
Three construction site alternatives are presented in this video for a navigable surge barrier planned for the IHNC area near the Seabrook Bridge - (no audio). Watch >>

Last updated 12/02/2009 DISCLAIMER PUBLIC INQUIRIES PRIVACY AND SECURITY FOIA INFORMATION QUALITY ACT ACCESSIBILITY

Hurricane Protection Office

Public Affairs

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New Orleans, LA 70118

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St. Bernard Parish Pump Station Repair Program: 2009 National Design-Build Award Winner

2009
NATIONAL DESIGN-BUILD AWARDS COMPETITION
NATIONAL DESIGN-BUILD AWARD
Rehabilitation/Renovation/Restoration
St. Bernard Parish Pump Station Rehabilitation
Presented to
US Army Corps of Engineers and CDM

Design-build contract for repair of Pump Stations 2, 3 and 5 in St. Bernard Parish. This repair project was completed in December 2008.

USACE 2011 Federal Engineer of the Year

Congratulations to

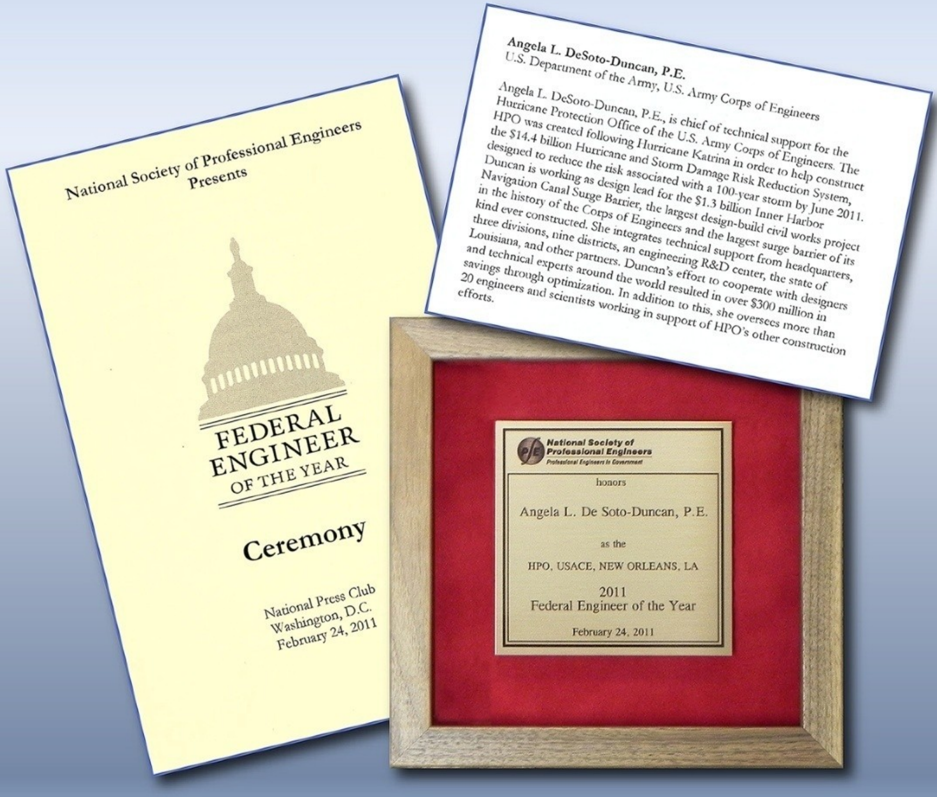
Angela DeSoto-Duncan, PE

Deputy Chief, Execution Support Division, HPO

on Being Selected as

USACE

2011 Federal Engineer of the Year



National Society of Professional Engineers
Presents

FEDERAL
ENGINEER
OF THE YEAR

Ceremony

National Press Club
Washington, D.C.
February 24, 2011

Angela L. DeSoto-Duncan, P.E.
U.S. Department of the Army, U.S. Army Corps of Engineers

Angela L. DeSoto-Duncan, P.E., is chief of technical support for the Hurricane Protection Office of the U.S. Army Corps of Engineers. The HPO was created following Hurricane Katrina in order to help construct the $14.4 billion Hurricane and Storm Damage Risk Reduction System, designed to reduce the risk associated with a 100-year storm by June 2011. Duncan is working as design lead for the $1.3 billion Inner Harbor Navigation Canal Surge Barrier, the largest design-build civil works project in the history of the Corps of Engineers and the largest surge barrier of its kind ever constructed. She integrates technical support from headquarters, three divisions, nine districts, an engineering R&D center, the state of Louisiana, and other partners. Duncan's effort to cooperate with designers and technical experts around the world resulted in over $300 million in savings through optimization. In addition to this, she oversees more than 20 engineers and scientists working in support of HPO's other construction efforts.

National Society of Professional Engineers
Professional Engineers in Government

honors

Angela L. De Soto-Duncan, P.E.

as the

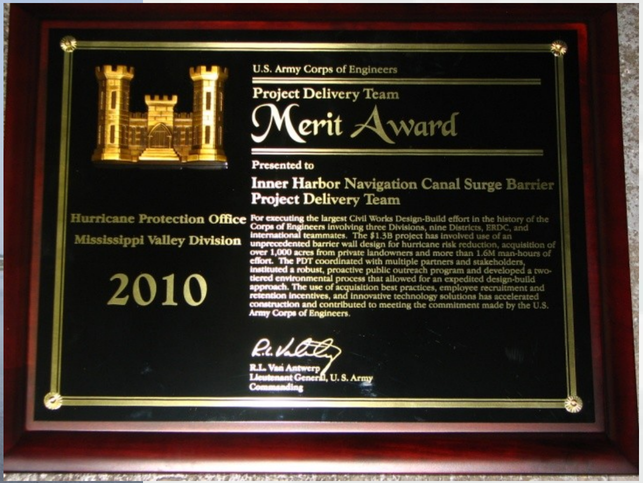
HPO, USACE, NEW ORLEANS, LA

2011
Federal Engineer of the Year

February 24, 2011

Federal Engineer of the Year Award
VAN ANTWERP
SINKLER
Federal Engineer of the Year Award
National Society of Professional Engineers

IHNC Project Delivery Team, winner of the 2010 USACE PDT Merit Award



U.S. Army Corps of Engineers

Project Delivery Team

Merit Award

Presented to

Inner Harbor Navigation Canal Surge Barrier
Project Delivery Team

Hurricane Protection Office
Mississippi Valley Division

2010

For executing the largest Civil Works Design-Build effort in the history of the Corps of Engineers involving three Divisions, nine Districts, ERDC, and international teammates. The $1.3B project has involved use of an unprecedented barrier wall design for hurricane risk reduction, acquisition of over 1,000 acres from private landowners and more than 1.6M man-hours of effort. The PDT coordinated with multiple partners and stakeholders, instituted a robust, proactive public outreach program and developed a two-tiered environmental process that allowed for an expedited design-build approach. The use of acquisition best practices, employee recruitment and retention incentives, and innovative technology solutions has accelerated construction and contributed to meeting the commitment made by the U.S. Army Corps of Engineers.

R.L. Van Antwerp
Lieutenant General, U.S. Army
Commanding